

FULL REPORT

STRENGTHEN THE ROLE OF
NATIONAL SOCIAL PARTNERS
AND VET PROVIDERS TO BUILD
SKILLS INTELLIGENCE IN THE
ELECTRICITY SECTOR



2021



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Spin360 supports companies, industrial associations, social partners and institutions in taking advantage of the opportunities for a development model based on prompt and ongoing anticipation of changes. The pillars on which the growth models we propose are based are: Sustainability, Progress, Innovation and Network, with a broad 360-degree approach.

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1. REPORT FOREWORD



The European social partners for the electricity sector – the European Public Service Union (EPSU), industriAll European Trade Union and Eurelectric – are pleased to present the final report of the EU project

“Strengthen the Role of National Social Partners and VET Providers to Build Skills Intelligence in the Electricity Sector”.

This project is the continuation of the previous EU project “Study on Skills Needs Developments, Vocational Education and Training Systems in the Changing Electricity Sector”, which provided a solid basis for developing the present report with its analysis of the drivers of change in the electricity sector, their impact on job roles and skills, and education programmes in Europe.

The identification of skills needed in the electricity sector as well as the role of social partners and VET (vocational education and training) providers in building solid systems for skills intelligence remains a priority. The electricity sector continues to play a crucial role in meeting the European 2030 climate target of a 55% reduction in greenhouse gas emissions. The same amount of emissions must be reduced in the next ten years as were in the past 30, and the most effective way to do so is clearly through decarbonisation.

We have seen another fundamental source of impact on the sector as a whole: the COVID-19 pandemic has forced governments and the general public to think about how to mitigate challenges such as a decline in electricity demand, reductions in services and industry and all of the exceptional circumstances stemming from the pandemic.

Europe is experiencing a significant rise in wind and solar, and tracking the progress of such an electricity transition means also being equipped with a solid set of skills and competences that can quickly respond to the demand of new technologies and business models that are paving the way, with consequent shifts in employment and job profiles.

This project responds to the need for putting the research we have conducted so far into practice, with a view towards strengthening relationships between social partners and VET providers in a more systematic way so that they can provide the skills that our sector most needs in order to weather the change.

Our ultimate beneficiaries are workers in the sector and young people just beginning to enter it; as such, methods for upskilling/reskilling as well as for increasing the attractiveness of the sector were key elements of this project, combined with the continued assurance of good working conditions and standards.



1. INTRODUCTION



1.1 BACKGROUND AND PROJECT OBJECTIVES

The present report collects the main outcomes of the EU project “**Strengthen the Role of National Social Partners and VET Providers to Build Skills Intelligence in the Electricity Sector**” (Project ref. VP/2018/001), coordinated by the European social partners for the electricity sector – the European Public Service Union (EPSU), industriAll European Trade Union and Eurelectric, in cooperation with national trade unions and industrial associations and the consultancy company Spin360 as a technical partner.

The project follows the conclusions of a previous joint project (Project ref. VS/2017/0005) whose main objective was the identification of skills, skills needs, mismatches and developments relevant to the future of the electricity sector, based on research on sectoral drivers of change and future employment demands. This first study led to a set of five policy recommendations that could support stakeholders at different levels (European social partners, industry, national social partners, education and training providers and relevant public authorities) in managing change in their roadmap of education and skills activities in the electricity sector.

In this context, the subject of the project of this report aimed at implementing three of the five policy recommendations in five representative countries (France, Italy, Spain, Hungary and Sweden – all in top 10 per employment), which are:



RECOMMENDATION 1

strengthen the role of social partners in the interaction with VET providers.



RECOMMENDATION 2

maintain and update sectoral intelligence on skills needs, in order to revise strategies and actions periodically.



RECOMMENDATION 3

summarise best practices identified during this project and define practical approaches and capacity-building projects in order to spread them across Europe.

The previous joint project demonstrated that two crucial issues affect the electricity sector, namely:

- Skill mismatches in education and training offer towards the needs of a rapidly changing sector
- Weak relations between VET providers and national social partners on skill intelligence and anticipation

To address such issues, it is essential for sectoral stakeholders to be aware of strategies for anticipating change and for ensuring that the electricity sector is always equipped with the right workforce in terms of skills and qualifications. But above all, the changes in new technologies, new business models, energy efficiency and the skills needed for energy transition must be compared and matched with the training offered by VET providers.

It is for this reason that the core of the project analysed in this report focuses on promoting capacity-building through workshops at the national level in the five representative countries, in order to stimulate exchange and mutual knowledge among national sectoral stakeholders (companies, VET providers, social partners, public authorities, etc.). This has also helped them raise awareness on training and skills evolution, stimulating the adoption of new training pathways and new curricula. The introduction of these capacity-building workshops represents a key innovative element of the project that enhances and favours the relationships between social partners and education and training providers, as these categories of players have never been in such a systematic and in-depth relationship to date.

THE PRESENT REPORT CONSISTS OF FOUR MAIN CHAPTERS, AS FOLLOWS:

- **CHAPTER 1**, which provides an **introduction to the project** in terms of background and objectives and briefly describes the methodology that has been applied throughout the project.
- **CHAPTER 2**, presenting the **findings** collected from the different project activities. In particular, an updated analysis of the EU electricity sector is provided, together with an overview of the VET system in the five representative countries, the best practices collected at the EU level and the four main principles representing the starting point for the capacity-building workshops at the national level in the five countries.
- **CHAPTER 3**, which specifically focuses on the **capacity-building activities**, namely the workshops held in the five representative countries. This section analyses the outputs emerging from the national meetings – common points as well as national peculiarities – in order to present a set of practical guidelines.
- **CHAPTER 4** draws the **main conclusions** of the project and details further possible next steps in the implementation of the main project outcomes.

¹ Originally, Romania was also included in the project activities. Due to constraints at a more national policy level, the capacity-building workshops could not take place in the country.

² First project report (VS/2017/0005) is available at: <https://www.epsu.org/sites/default/files/article/files/REPORT%20VET%20ELECTRICITY.pdf>



1.2 METHODOLOGY

To achieve the above-mentioned project objectives, a mixed-method approach was adopted:

First, a structural analysis of the electricity sector at the EU level was carried out in order to provide an updated overview on sectoral intelligence on skills needs, characterisation of the workforce, market drivers and forecasting. In addition, research was conducted to identify VET systems, focusing on the five representative countries, as was an analysis of best practices at the EU level regarding capacity-building strategies and skills intelligence anticipation and harmonisation.

Secondly, an off-site survey was launched to formalise forecasts previously identified and update the results from the past project regarding employment, drivers of evolution of the sector, future job opportunities and evolution of skills.

Then, a high-level workshop was organised in September 2019 to validate the results of the in-depth analysis. The workshop represented an occasion to identify the best possible ways to transfer the results to the national level through the capacity-building workshops. It therefore represented a sort of bridge between research and implementation, providing a precise pathway for and definition of the expected outcomes of the national capacity-building workshops.

Lastly, national capacity-building workshops were organised in France, Italy, Spain, Hungary and Sweden from 2019 to 2021. The selection of the countries was taken from the top 10 which were most actively involved in sectoral social dialogue as well as the countries' declared interest in engaging in the project. The workshops brought together companies, trade unions, education and training providers and public authorities at the sectoral level. The main goal was to exchange ideas and propose practical solutions at the national level based on the proposed outcomes

³ The results of this analysis are thoroughly presented in the full report of the project



identified at the European level, as well as to promote continuous exchange of best practices on capacity-building strategies on new skills needs in the sector. In every workshop, participants had the chance to:

- Get to know each other better
- Be involved in interactive group work to elaborate concrete proposals based on key sectoral issues and themes
- Contribute to the finalisation of a national roadmap for the electricity sector which was based on the practical proposals they created

The workshops in France, Italy and Spain each consisted of a 2-day workshop in a face-to-face format. Due to the current COVID-19 pandemic, the workshops in Hungary and Sweden brought stakeholders together in "virtual" roundtables. For each country, there were 3 separate online meetings.



2. KEY FINDINGS



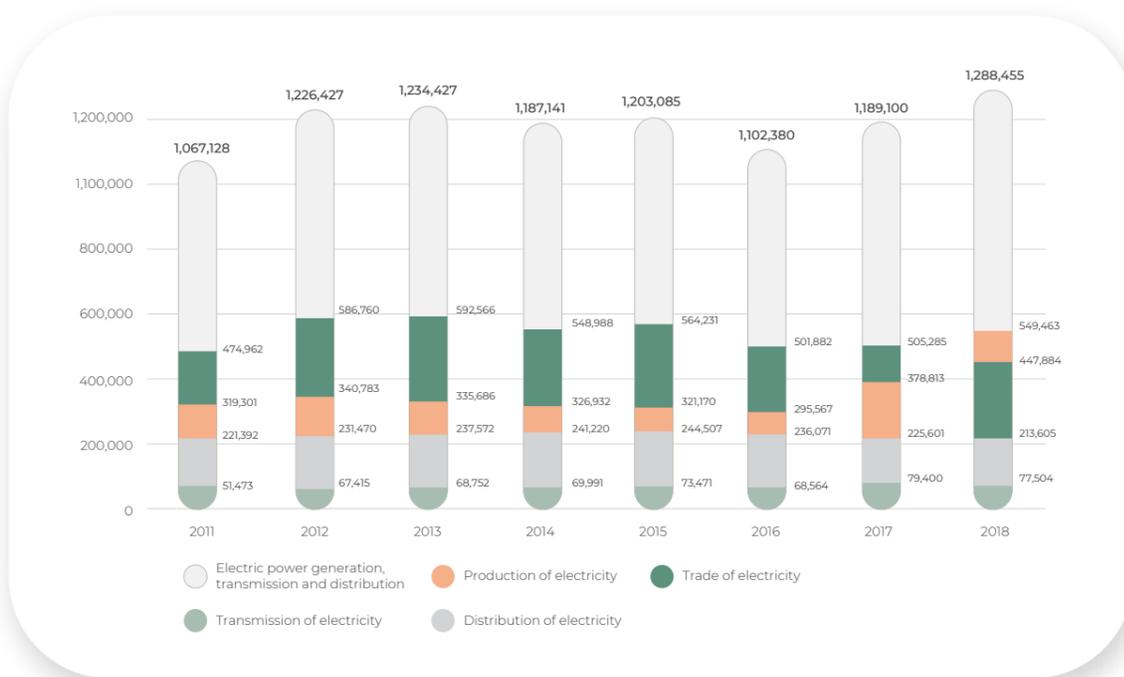
2.1 UPDATED ANALYSIS OF THE EU ELECTRICITY SECTOR

This section provides an updated picture of the sector, with data sources from Eurostat, taking into consideration the most relevant indicators showing the economic structure and market dynamics of the most significant EU countries in terms of production. The electricity industry in the Eurostat Database is labelled as “electric power generation, transmission and distribution” (NACE D351) and it is composed of the following subsectors:

- “Production of electricity” (NACE D351.1)
- “Transmission of electricity” (NACE D351.2)
- “Distribution of electricity” (NACE D351.3)
- “Trade of electricity” (NACE D351.4)

In 2018 the “electric power generation, transmission and distribution” industry generated a turnover of EUR 1.289 billion throughout the EU-28.

FIG. 01: TURNOVER OF THE “ELECTRIC POWER GENERATION, TRANSMISSION AND DISTRIBUTION” INDUSTRY
EUROSTAT DATABASE



According to Figure 1, “trade of electricity” was the subsector that had the most relevant weight in the total sector turnover until 2017 (accounting in 2017 for nearly 42% of the total), while “production of electricity” gained speed in 2018, overcoming others and becoming the most relevant subsector (accounting for nearly 43% of the total). From 2011 to 2018 the trend for “electric power generation, transmission and distribution” sector turnover was +17%. There was an almost stable trend during 2011 - 2018 for the “distribution of electricity” subsector and a +34% increase for the “transmission of electricity”.

FIG. 02: TOP 10 COUNTRIES IN TURNOVER, NACE D351 TOP 10 COUNTRIES IN TURNOVER, NACE D351 (2018, N°)
EUROSTAT DATABASE

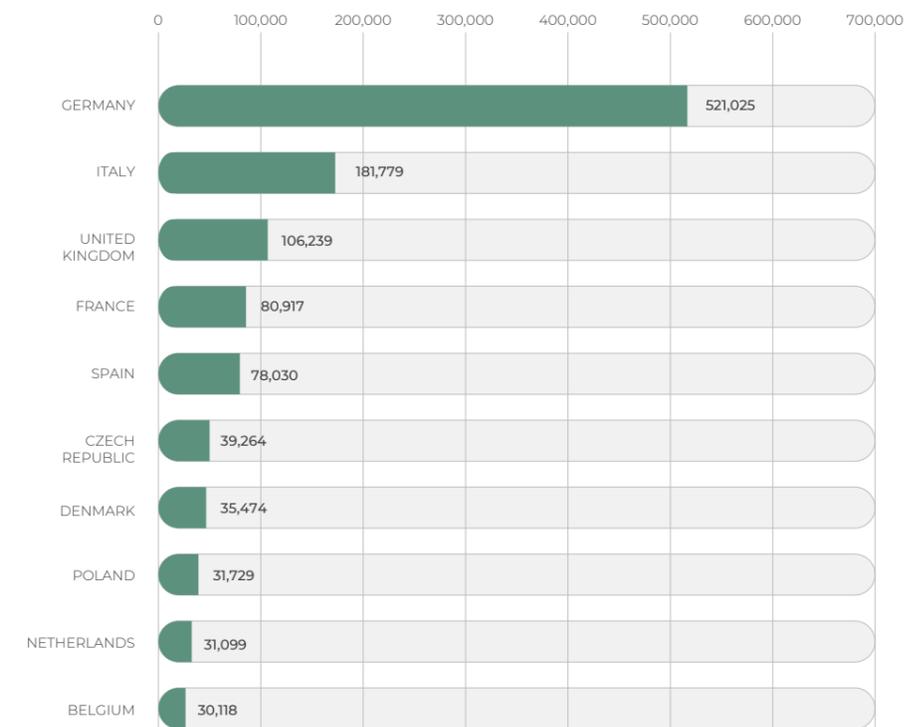


Figure 2 shows that Germany had the largest turnover in 2018, with almost three times the amount of the country ranking second (Italy).

Approximately 75% of “electric power generation, transmission and distribution” turnover is generated in five main countries (Germany, Italy, UK, France and Spain). The top 10 countries represent 88% of the total.

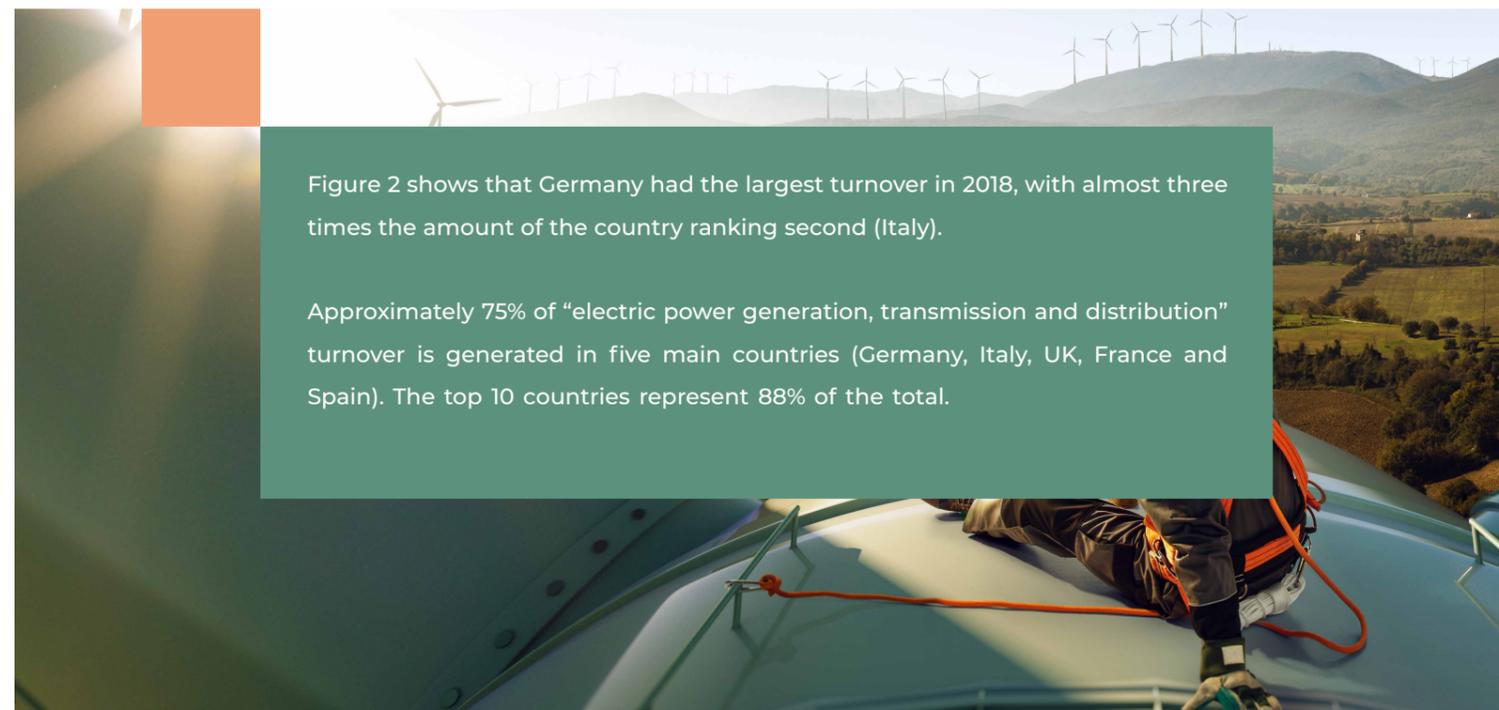


FIG. 03: NUMBER OF ENTERPRISES IN THE "ELECTRIC POWER GENERATION, TRANSMISSION AND DISTRIBUTION" INDUSTRY (2011-2018, NUMBER)
EUROSTAT DATABASE

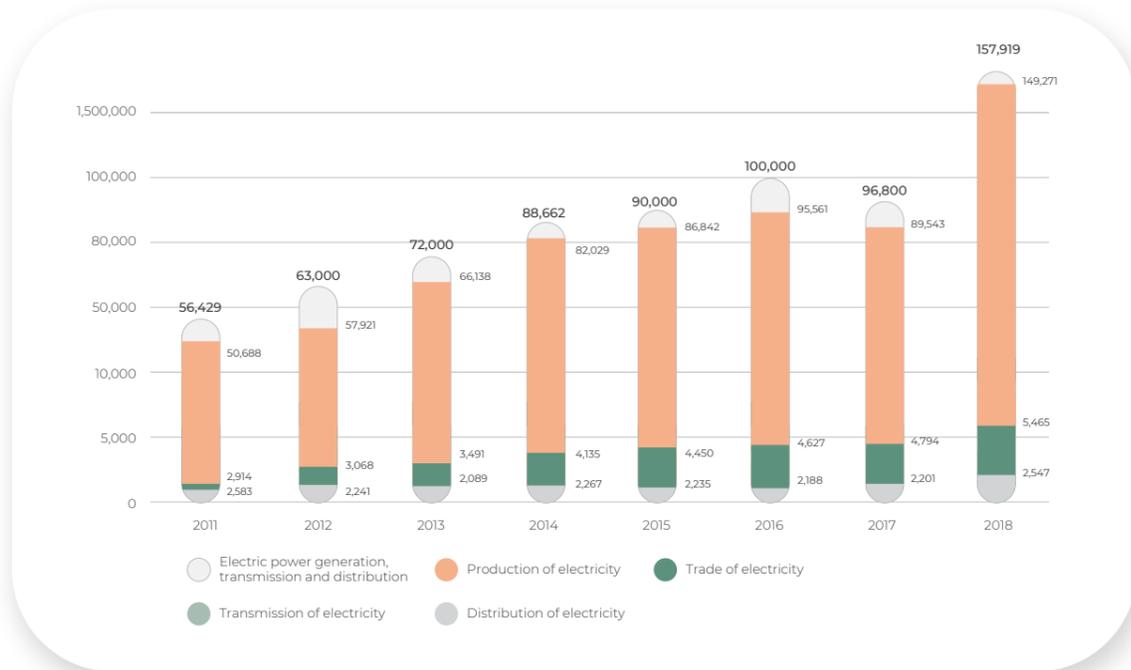
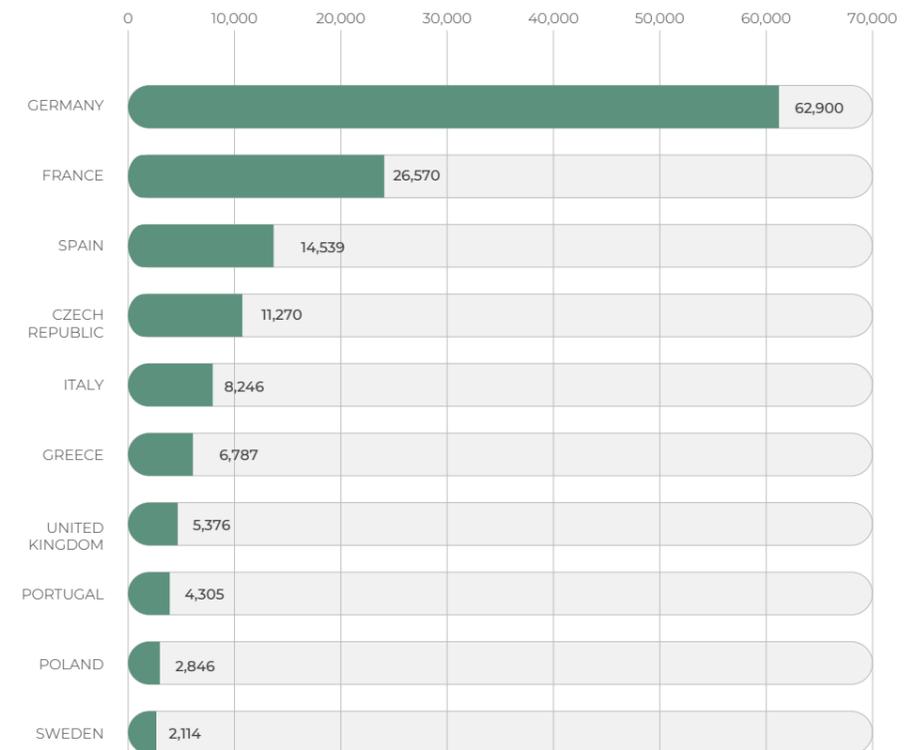


Figure 3 shows that the total number of companies in Europe representing the sector in 2018 was about 158,000, and from 2011 to 2018 the trend was +180%, mainly driven by the impact of the “production of electricity” subsector which at that time had a trend of +194%.

The “distribution of electricity” subsector saw a nearly stable trend during this period, and “trade of electricity” increased by 88%. Not enough data are available to analyse the trend for “transmission of electricity”, although an interpolation of the data from 2011, 2014 and 2017 shows an increase of 23%.

FIG. 04: TOP 10 COUNTRIES PER NUMBER OF ENTERPRISES, NACE D351
EUROSTAT DATABASE



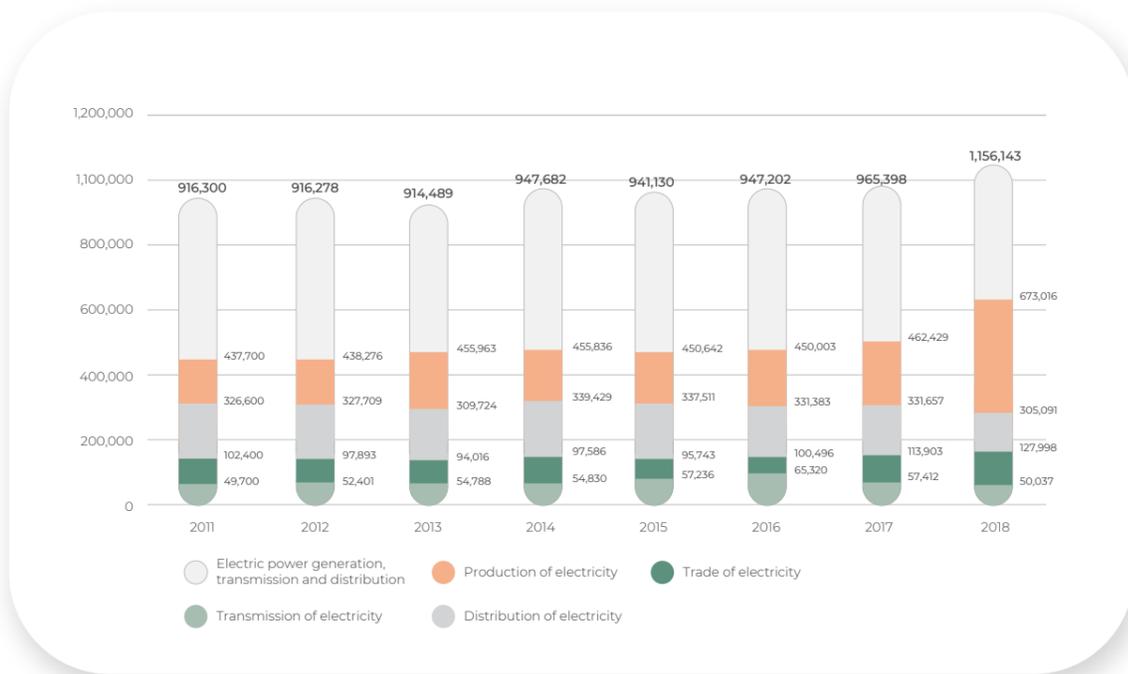
In Figure 4 the 2018 distribution of the number of enterprises in the sector shows that Germany is confirmed as the first, with almost three times the number of the country ranking second (France)³.

Approximately 78% of the “electric power generation, transmission and distribution” enterprises are concentrated in five main countries (Germany, France, Spain, The Czech Republic and Italy). The top 10 countries represent 92% of the total. Hungary, which was involved in the project, is not included in the top 10 countries, having 716 enterprises.

³ French data are from 2017.

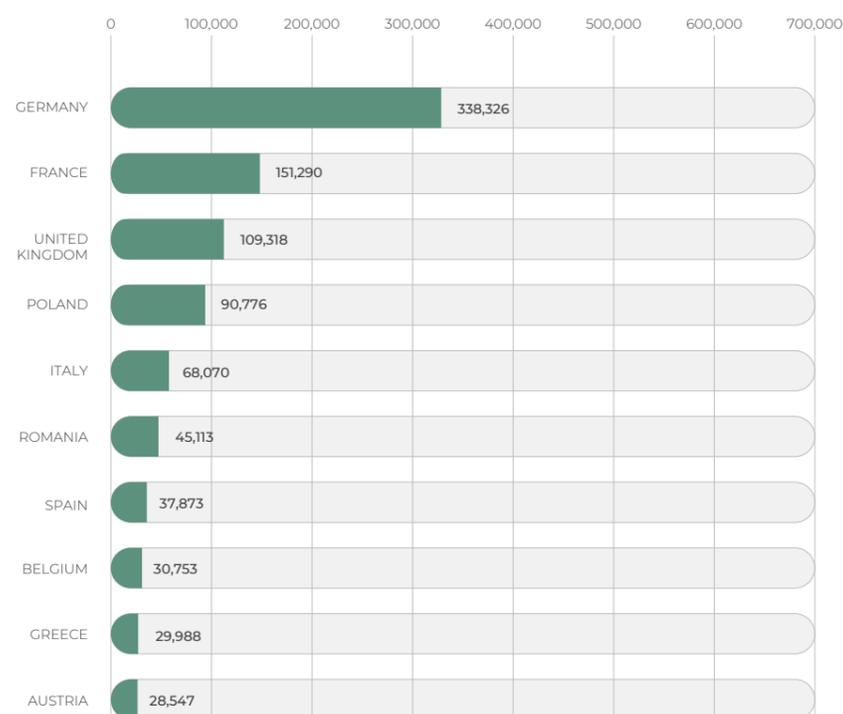


FIG. 05: NUMBER OF ENTERPRISES IN THE "ELECTRIC POWER GENERATION, TRANSMISSION AND DISTRIBUTION" INDUSTRY (2011-2018, NUMBER)
EUROSTAT DATABASE



The number of persons employed in the industry (Figure 5) saw a positive trend of 26% in the 2011-2018 period. This was due to the significant upward trend in the "production of energy" subsector (+54%), and in the "trade of electricity" subsector (+25%). The trend for the "transmission of electricity" and "distribution of electricity" subsectors was nearly stable.

FIG. 06: TOP TEN COUNTRIES BY NUMBER OF PERSONS EMPLOYED, NACE D351 / EUROSTAT DATABASE



2.2 RESULTS OF THE OFF-SITE SURVEY UPDATE

The second methodological step of the project was an off-site survey launched to formalise previously identified forecasts and update the results from the previous project with regard to employment, drivers of sector evolution, future job opportunities and evolution of skills.

The survey targeted six countries in six different languages (France, Hungary, Italy, Romania, Spain, Sweden) for a total of 76 members and affiliates. The following paragraphs present the most relevant results for the purpose of the project in the following areas:

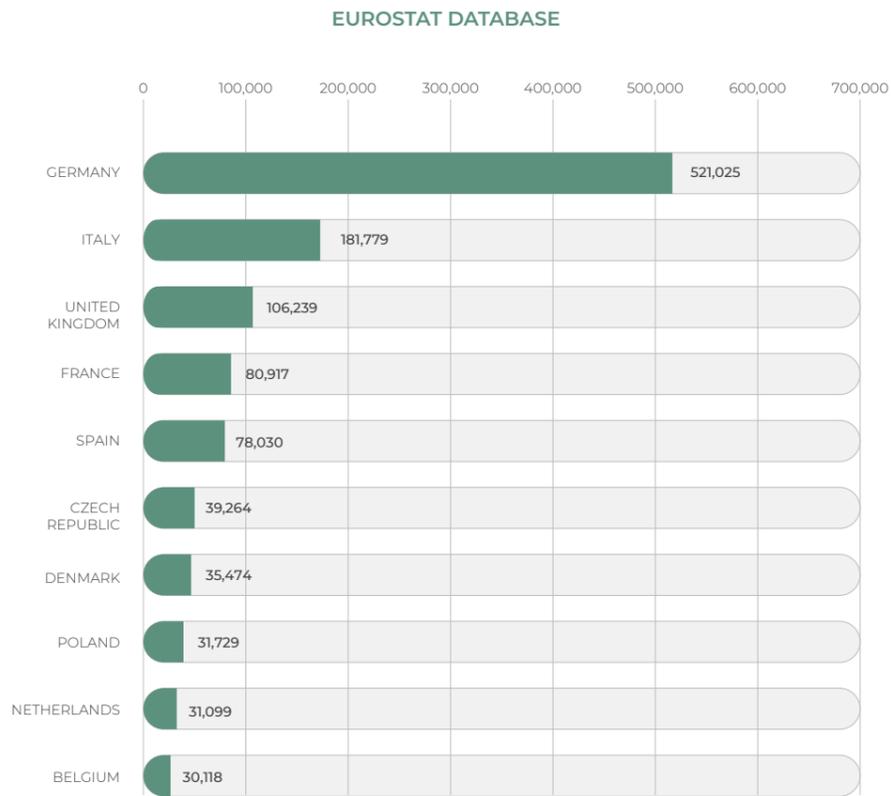
- Drivers of change
- Skills needs
- Occupations
- Attractiveness of the sector

FIG. 07: COMPOSITION OF STAKEHOLDERS



First, Figure 7 shows the composition of the stakeholders in the survey, with a response rate of 44%. Most respondents were trade unions (22, or 66%), followed by companies (7, or 21%) and national employers' associations (3, or 10%). Education and training organisations represented 3% (1).

FIG. 08: TOP 10 COUNTRIES IN TURNOVER, NACE D351 TOP 10 COUNTRIES IN TURNOVER, NACE D351 (2018, N°)



The distribution of respondents per country is shown in Figure 8, where the majority of replies come from Italy (38%), France (25%) and Hungary (13%). Respondents in Spain, Sweden and Romania replied in identical proportions (8%).

To arrive at the core of the survey results, an important component was the analysis of the evolution of drivers of change in the sector and their impact on skills and occupations so as to compare these results with those of the first project and highlight any potential changes. Before making such a comparison, it is worth mentioning that during the first research project, three main drivers of change groups emerged⁴:

³ Available at <https://www.epsu.org/sites/default/files/article/files/REPORT%20VET%20ELECTRICITY.pdf>

1

DECARBONISATION OF THE SECTOR

considering economy-wide greenhouse gas emissions reduction goals consistently see the power sector as the linchpin of efforts to reduce greenhouse gas (GHG) emissions which would accomplish this further and faster than other sectors of the economy such as transportation, heating, agriculture, and industry.

Policy initiatives have assisted the energy efficiency and renewable energy cause and decarbonisation mandates around the world, and currently, EU policies and frameworks such as the recent EU Clean Energy Package define new binding targets to be reached by 2030: a 40% reduction in CO2 emissions at a national level, a 27% increase in renewable energy sources (EC baseline) and a 30% increase in energy efficiency.

To reach these goals, the power sector seems to have a crucial role and it would need to cut emissions nearly to zero while expanding to electrify (and consequently decarbonise) portions of the transportation, heating, and industrial sectors.⁵ All countries have to significantly increase their efforts in order to decarbonise the energy sector in the future: this can take the form of a multi-faceted approach, but managing the use of renewable energies such as wind and solar power is a key requirement.

³ Roadmap 2050: A practical guide to a prosperous, low carbon Europe, 2010, available at <https://www.roadmap2050.eu/>

2

STRUCTURAL AND TECHNOLOGICAL CHANGES IN THE SECTOR

the power sector is facing several fundamental structural and technological developments that are changing the overall global energy system (decentralised energy production, long-duration battery storage technologies and automation and controlling). The rise and adoption of big data and Internet-based applications are making systems more intelligent and interactive, altering demand-side habits and stimulating the rapid development of new business models by providers, start-ups and companies in adjacent fields, with a consequent need for reskilling and upskilling processes within the sector.

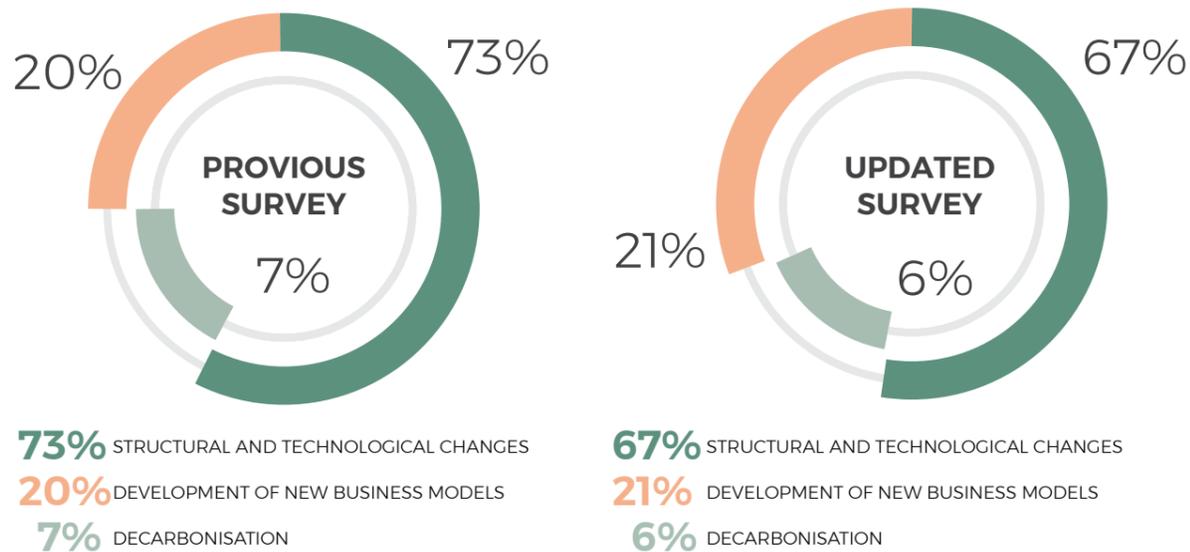


3

DEVELOPMENT OF NEW BUSINESS MODELS IN THE SECTOR

After the liberalisation of the market, new players have gradually entered markets, competing to offer new services and adapt new energy supply models for end consumers. This trend will probably continue with newcomers in an ever more rapidly changing market; moreover, traditional barriers to market entry have changed, as new energy companies no longer need to own lots of infrastructure. In this scenario, interaction with end users is increasing with the development of information and communication technologies such as apps on mobile devices, online portals and chats. In the medium term, future consumers will be able to choose from a wide array of potential power sources, with a big share of renewable energy source services, and use web technologies to achieve greater autonomy and be more aware of energy use.

FIG. 09: EVOLUTION OF DRIVERS OF CHANGE



The comparison between the first survey (2017) and the second one (2019) is highlighted in Figure 9, where we asked participants which driver of change they perceived to have the greatest impact on the sector. Overall, results of the previous survey are confirmed; there is a 7% increase in “development of new business models”, a 6% reduction in “structural and technological changes”, and a 1% decrease in “decarbonisation”. “Structural and technological changes” is confirmed as the most relevant driver of change.

During the survey, respondents were also asked to indicate the perceived impact of each driver of change to the occupations emerging from the first survey, namely:

FIG. 10: IMPACT OF DRIVERS OF CHANGE ON OCCUPATIONS

	PROFESSION	DRIVERS OF CHANGE	CONSEQUENCE
1	O&M: Network Electrician	STRUCTURAL AND TECHNOLOGICAL CHARGES	79%
2	O&M: Household Metering Technician	STRUCTURAL AND TECHNOLOGICAL CHARGES	77%
3	O&M: Facility Technician	STRUCTURAL AND TECHNOLOGICAL CHARGES	64%
4	Engineer: Planning & Development, Production and Maintenance of Electricity in General Facilities	STRUCTURAL AND TECHNOLOGICAL CHARGES	67%
5	Engineer: Network	STRUCTURAL AND TECHNOLOGICAL CHARGES	77%
6	Engineer: Storage	STRUCTURAL AND TECHNOLOGICAL CHARGES	64%
7	Project Manager and Business Developers	STRUCTURAL AND TECHNOLOGICAL CHARGES/ NEW BUSINESS MODEL	54%
8	Commerce & Trading: Sales Manager/Operative and Sales Employees	DEVELOPMENT OF NEW BUSINESS MODELS	51%
9	Commerce & Trading: Customer Relationships & Services	DEVELOPMENT OF NEW BUSINESS MODELS	46%
10	Asset Engineer/Manager	STRUCTURAL AND TECHNOLOGICAL CHARGES	46%
11	Energy Efficiency Advisor	DECARBONIZATION	51%
12	ICT Specialist: Big Data Analyst	STRUCTURAL AND TECHNOLOGICAL CHARGES	49%
13	ICT Specialist: ICT Technicians	STRUCTURAL AND TECHNOLOGICAL CHARGES	44%
14	Back-Office Employee	DEVELOPMENT OF NEW BUSINESS MODELS	44%
15	Network Operator and Dispatcher	STRUCTURAL AND TECHNOLOGICAL CHARGES	56%

In Figure 10 it is possible to see a correlation between the drivers of change update and the occupations which emerged from the first survey. It is important to emphasise that these occupations are not only specific to the electricity sector but also cross-disciplinary (e.g., **commerce & trading and back office**). According to the overall replies (“Consequence” column), respondents expect the most relevant impacts of drivers of change to be on blue collar occupations (**O&M - Operation & Maintenance**), followed by grey collar (**engineers, project managers**) and white collar (**commerce**) occupations. **ICT specialists, back office** and **asset engineers/managers** are expected to have the lowest impacts.

FIG. 11: NEW SKILLS NEEDS IN THE NEXT 10 YEARS



With regard to skills needs, Figure 11 shows how respondents evaluated the skills needs in the next 10 years, comparing the first survey results with the current ones. The **“technology - digital”** area received the highest number of replies in terms of perceived needs (56%, compared to 40% in the previous survey) and the most voted skill in this area is “communication technology”. The **“specialised technical”** area ranks second (even if the percentage is similar: 15% in the present survey versus 16% in the previous survey), followed by **“marketing”** (with a percentage similar to the previous survey – 12% versus 13%). The **“soft”** area of skills is the one with the highest gap compared to the first survey (9% present survey, 22% first survey), followed by “manager” and **“operational/ maintenance”** in a similar position.



FIG. 12: SKILLS GAPS IN THE WORKFORCE

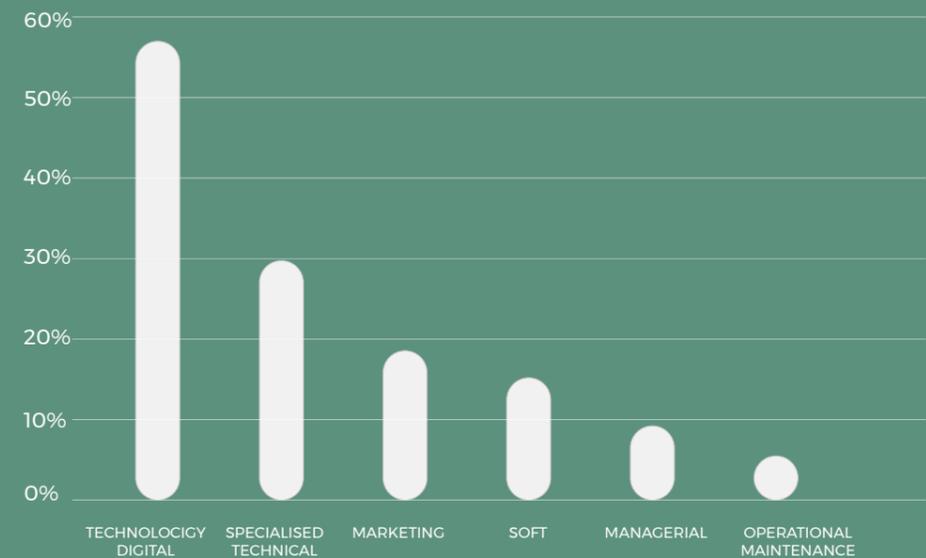
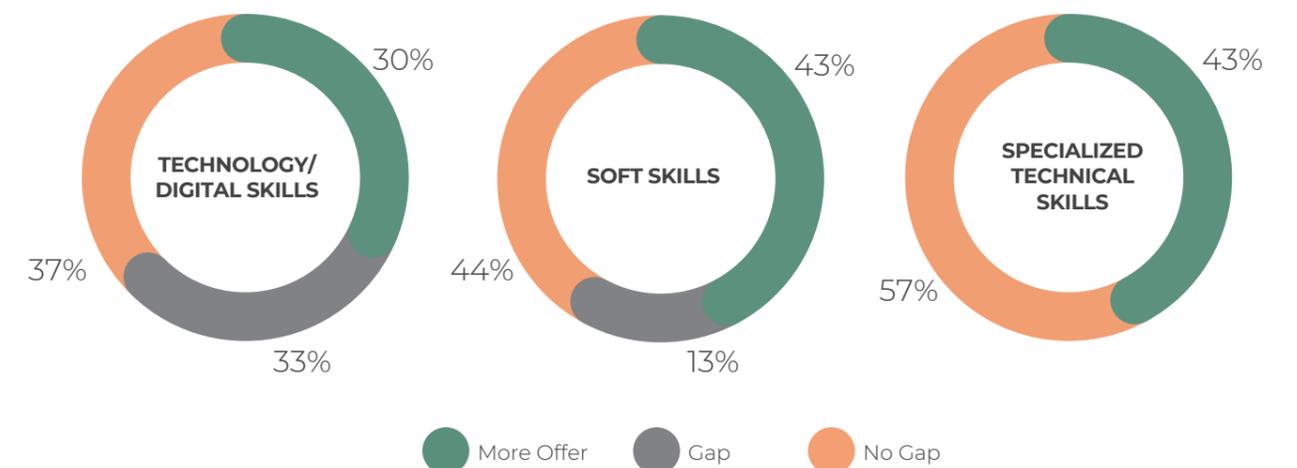


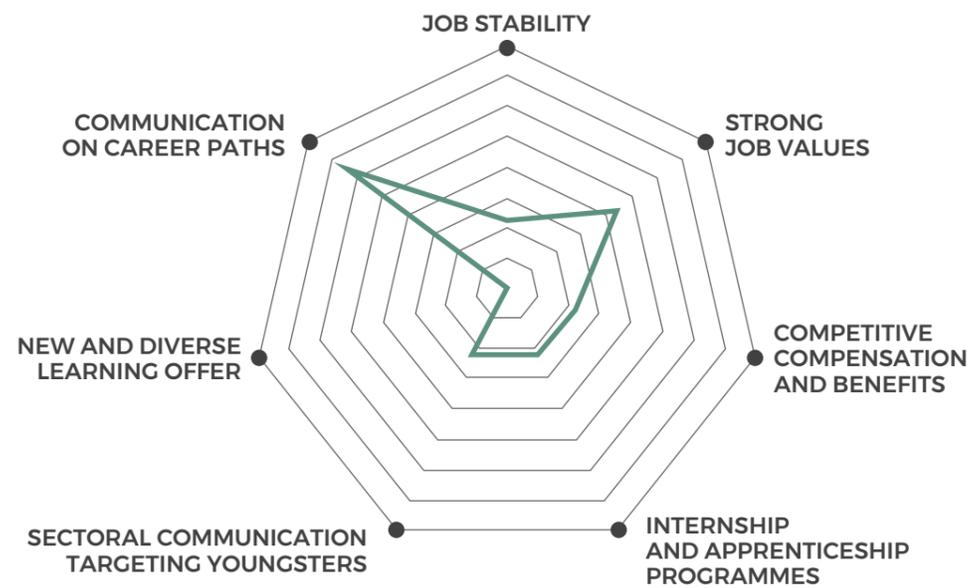
Figure 12 shows the perception of the respondents regarding the current most relevant skills gaps in the workforce entering the sector⁶. The “technology – digital” skill is ranked first at 62%, followed by “specialised technical” with 30% and “soft” with 19%⁷.

FIG. 13: NEW SKILLS NEEDS IN THE NEXT 10 YEARS



The survey analysis was also aimed at investigating the VET system in the electricity sector and compare what is currently offered at the education and training level with skills needs, and eventually see if there are any gaps. Figure 13 shows that for each skill area the “gap” (in blue) is quite small (the largest is in technology/digital skills), and the “excess offering” (yellow) is always predominant, meaning that what is currently offered by VET providers seems to cover skills needs. This result does not seem to match entirely with the project activities that followed the survey exercise (i.e., national capacity-building workshops; see Chapter 3), where all participants highlighted the need to better engage VET in the process of skills anticipation. Indeed, it should be mentioned that the quite low response rate of the survey does not make it fully representative, but it is important for greater understanding and to give us some orientations to reflect on. More legitimate results should be found in the capacity-building workshops, which represent the “qualitative” aspects of the project.

FIG. 14: ATTRACTIVENESS OF THE ELECTRICITY SECTOR



The final step of the survey aimed to investigate the attractiveness of the sector. Figure 14 shows the issues that stakeholders indicated were most important for increasing its attractiveness. Clear “communication on career paths” got the majority of replies, where a strong interaction between companies and VET providers is perceived as essential; this is followed by the creation of “strong job values”. Conversely, a “new and diverse learning offer” is not considered a key element for increasing the attractiveness of the sector.



2.3 OVERVIEW OF NATIONAL VET SYSTEMS

An essential step in the structural analysis was research conducted to identify VET systems at the country level in order to map education and training providers in the five target countries. This was essential preparatory work for the capacity-building meetings⁸.

Vocational education can be offered at full-time schools or within the framework of the dual system, which means that training is conducted at two places of learning: companies and vocational schools. This system is practiced notably in Germany, Austria, and Switzerland, but also in other EU countries.

According to the International Standard Classification of Education (ISCED), VET providers can be classified based on the level of the vocational education and training offered, as shown in Figure 15.

FIG. 15: ISCED CLASSIFICATION

GENERAL EDUCATION		VOCATIONAL EDUCATION AND TRAINING		
ICSED 5-8 EQF 5-8 PhD programmes Master programmes Bachelor programmes 18+	ICSED 5-7 EQF 5-8 Higher VET program	ICSED 4 EQF 4-5 Post secondary VET	POST SECONDARY LEVEL	TERTIARY LEVEL
ICSED 3 EQF 4 Upper secondary General programmes 15	ICSED 3 EQF 3-4 Upper secondary VET	UPPER SECONDARY LEVEL		SECONDARY LEVEL
		LOWER SECONDARY LEVEL		
ICSED 2 EQF 2 Upper secondary Lower secondary	ICSED 2 EQF 2 Lower secondary VET			

Generally, the majority of VET providers mapped in the electricity sector offer courses at the upper secondary education level (ISCED 3). The following paragraphs will present a more detailed picture of the VET system in France, Italy, Hungary, Spain and Sweden.

⁸ Research on this topic was conducted following the VET in Europe reports prepared by Cedefop's ReferNet network. All reports, including those of the five countries analysed, are available at <https://www.cedefop.europa.eu/en/publications-and-resources/country-reports/vet-in-europe-country-reports>



FRANCE

In France, education is compulsory up to age 16, when lower secondary programmes end. These are four-year school-based programmes provided in collèges – junior high school for learners aged 11-15. In the final year, pupils choose their further educational pathway from three paths in upper secondary education:

1. The **general curriculum** path leads to the secondary education general diploma (baccalauréat - BAC) at age 18, which guarantees entrance to university. Since this examination is losing its value in most countries, nearly 90% pass it and it does not provide the skills or competences required by the market.
2. The **technological curriculum** leads to the secondary education technological diploma (baccalauréat technique); this diploma opens up access to two-year studies in higher education to obtain an advanced technician certificate (BTS) or a technological university diploma (DUT) (EQF Level 5).
3. The **vocational curriculum** prepares students mainly for the following two qualifications: the two-year CAP (Professional Skills Certificate, EQF 3), or the three-year Vocational Baccalaureate (BAC Professionnel, EQF 4).

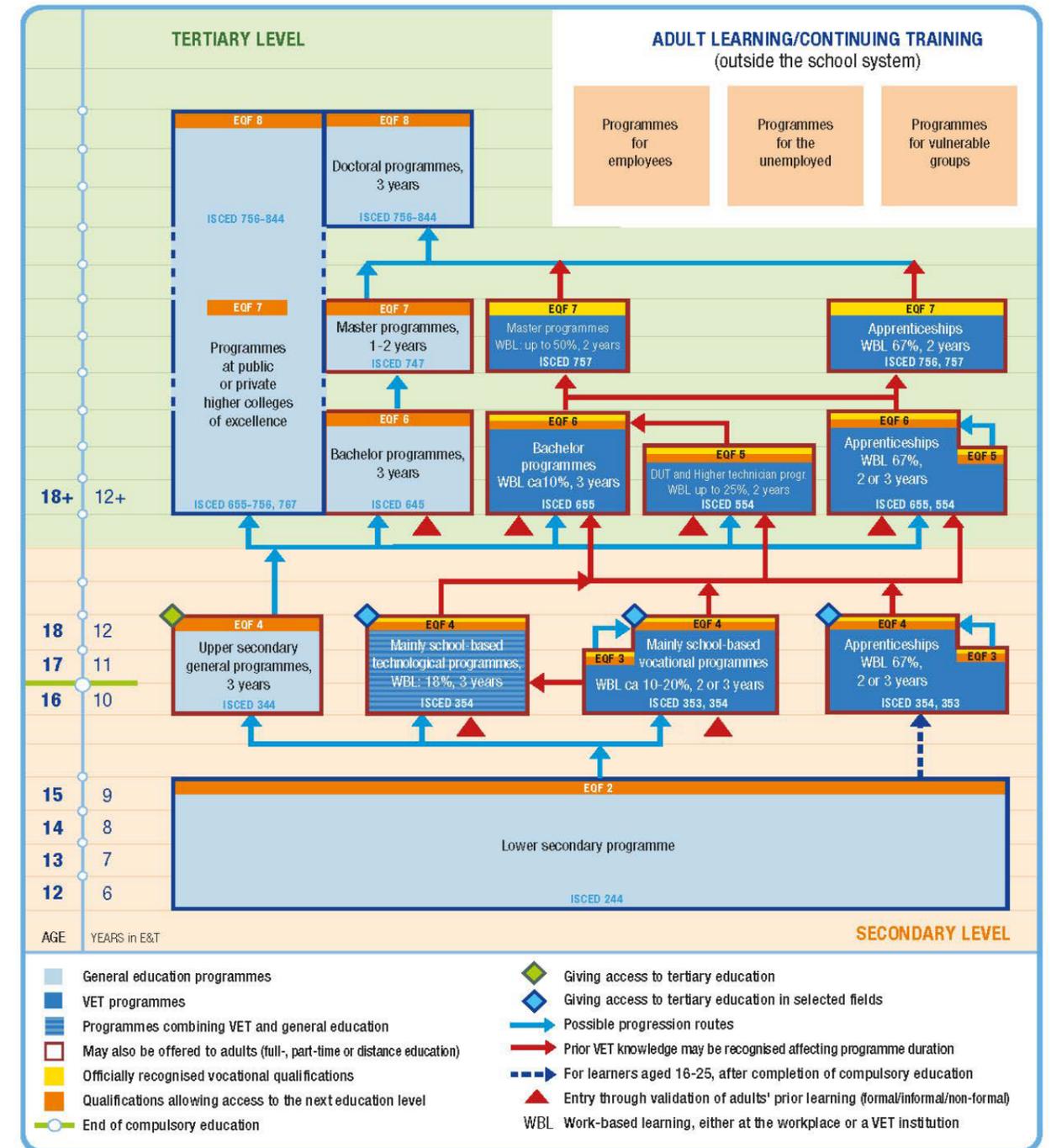
At the tertiary level, alongside the general education path (Bachelor, Master or PhD) there are also two-year technology degrees: the DUT for technical and professional management roles in certain sectors and the BTS, which is pursued in the advanced technician section of a so-called vocational lycée. They prepare people with specific skills for immediate entry in the labour market.

Therefore, in France the initial vocational training for young people (including apprenticeship) is offered from the upper secondary to tertiary education levels, enabling young people to obtain qualifications for the labour market. Young people can study for IVET qualifications in a vocational lycée or as apprentices in an Apprentice Training Centre (CFA - Centre de Formation des Apprentis). Secondary and higher education programmes include entire curricula or periods of vocational training, of various lengths.

The qualifications and vocational certificates include the following:

- **The Professional Skills Certificate – CAP** (Certificat d'aptitude professionnelle, EQF 3). This demonstrates the first-level qualification of its holder to be a qualified worker or employee in a given employment sector. There are around 200 CAP specialties relevant to the industrial, commercial and service sectors.
- **The Vocational Baccalaureate** (Baccalauréat professionnelle, EQF 4) is a qualification that allows successful candidates to enter into a profession. It offers almost 90 specialties.
- **DUT, Diplôme Universitaire Technologique** (undergraduate certificate of technology, EQF Level 5). This is a two-year vocational degree open to people with a baccalaureate or equivalent. It offers training in 24 specialties.

FIG. 16: FRENCH EDUCATION SYSTEM



NB: ISCED-P 2011

Source: Cedefop and ReferNet France.

- **BTS, Brevet de Technicien Supérieur** (Advanced Technician Certificate, EQF Level 5). Study for the BTS takes place in the advanced technician section of a so-called vocational lycée. It gives access to a two-year professional qualification.
- **The Vocational Bachelor Degree** (Licence Professionnelle, EQF 6) is a national qualification issued by a university. It is open to people with a baccalaureate, but also those who have obtained post-baccalaureate qualifications, such as a BTS or a DUT. It was designed to allow people to move directly into a profession. It enables students who wish to quickly acquire a professional qualification corresponding to clearly identified needs and jobs. It offers training in 173 specialties, across all fields.

Although France has been engaged in a process of decentralisation of the education system for the last ten years, today the national government is still in charge (for all levels of public education) of:

- Implementing educational policy
- National education curricula (objectives)
- Recruitment, training and salaries of teachers

In this decentralisation process, regions contribute to education planning with the main role still played at a central level by the National Ministry of Education.

At the same time, there are also vocational training schemes that can either deliver qualifications created and awarded by players other than the State, or that can meet specific needs for the acquisition or development of professional skills. The three main sectoral qualifications are:

- **Certificates of Professional Qualification** (Certificats de Qualification Professionnelle – CQP),
- **Qualified Engineer Degrees** (Titres d'Ingénieur Diplômé)
- **Business and Management Qualifications** issued by elite higher education institutions (Grandes écoles)

With specific reference to the electricity sector, we can mention examples of qualifications to become a maintenance/installation electrician, which are:

- The CAP (EQF Level 3)
- A Vocational Baccalaureate (EQF 4)
- An Advanced Technician Certificate (EQF 5) or a Master of Engineering Degree in Electricity (EQF 6-7)



HUNGARY

In Hungary, the compulsory schooling age is 16. Vocational education and training can be provided in upper secondary, post-secondary and higher education programmes.

Upper secondary education is divided into three streams, two of which offer vocational education and training:

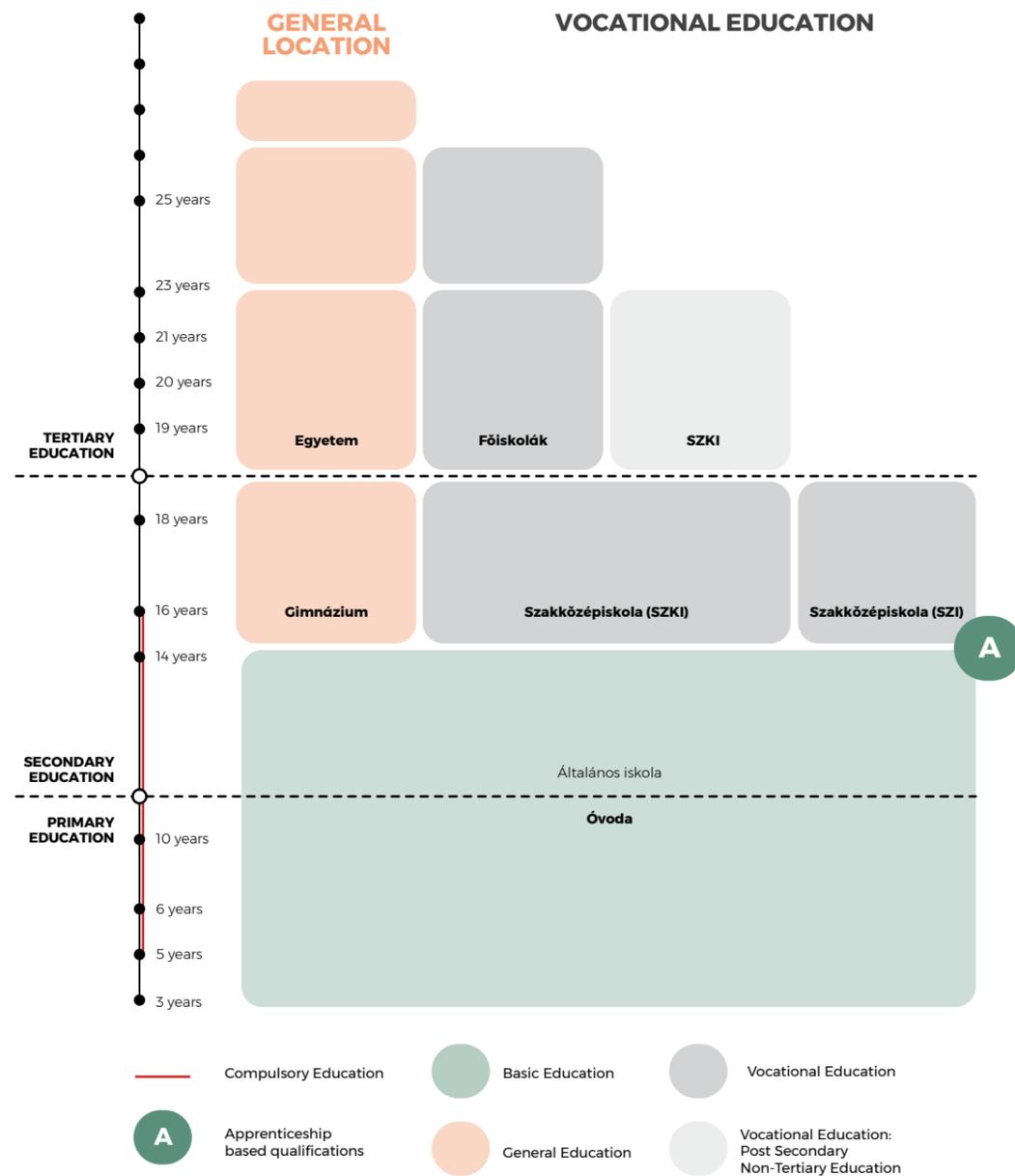
- **The Mainstream Grammar School** (Gimnázium) (lower and upper cycles) from age 10 to 18. The school-leaving certificate (Erettségi) allows pupils to move on to higher education.
- **The Technical Secondary School** (SZKI) from age 14 to 18/19. Both mainstream and vocational education are on offer here and pupils can go on to higher education.
- **The Vocational Secondary School** (SZI) from age 14 to 17/18. This school offers vocational training leading to a vocational diploma.

With regard to higher education, Higher Education VET Programs (felsőoktatási szakképzés, FSZ) are open to students who have obtained a certificate of completion of secondary education. They cover two years of study. Only colleges can offer vocational higher education. Since 2015/16, higher VET is also offered in individual programmes. The higher VET institution signs a cooperation agreement with the company providing practical training, while the company has to sign an employment contract with the VET student.

The Hungarian VET system is open and flexible. There is a structured qualification register (National Qualification Register) with the list of all state-recognised VET qualifications (and basic data about them) that can be obtained either within or outside the school system. It also specifies the ISCED levels of these qualifications. Dual training is available throughout secondary education and mainly leads to the crafts and trades.



FIG. 17: HUNGARIAN EDUCATION SYSTEM



In terms of VET governance, the following are the main responsible bodies:

- **Ministry for the National Economy:** the ministry responsible for qualifications, defining the vocational and examination requirements and sharing practical/theoretical training.
- **Novetal, National Office of VET and Adult Learning,** which is the responsible administrative body.
- **Hungarian Chamber of Commerce and Industry,** which elaborates and maintains the vocational and examination requirements for qualifications.
- **National Economic and Social Council (NECS):** a complex forum for discussion, consultation and proposals independent of the government (including employer and employee organisations, economic chambers, NGOs, representatives of academic fields, etc.).



ITALY

In Italy, VET programmes address both young people and adults and can be school-based, company-based or combine school and company-based learning (apprenticeships).

Young people complete lower secondary education at the age of 14. At this stage, learners sit for a state exam to acquire a certificate (EQF Level 1) which grants admission to the upper secondary level where young people have the opportunity to choose between general education and VET. At the upper secondary level, young people may opt for:

- **Five-year programmes**
- **Regional Education and Vocational Training** courses (3-4 years - EQF 3 or 4 respectively). These offer a qualification and professional diploma upon completion of a pre-established number of training hours within the dual system model.
- **An apprenticeship-type scheme** (EQF 3 or 4)

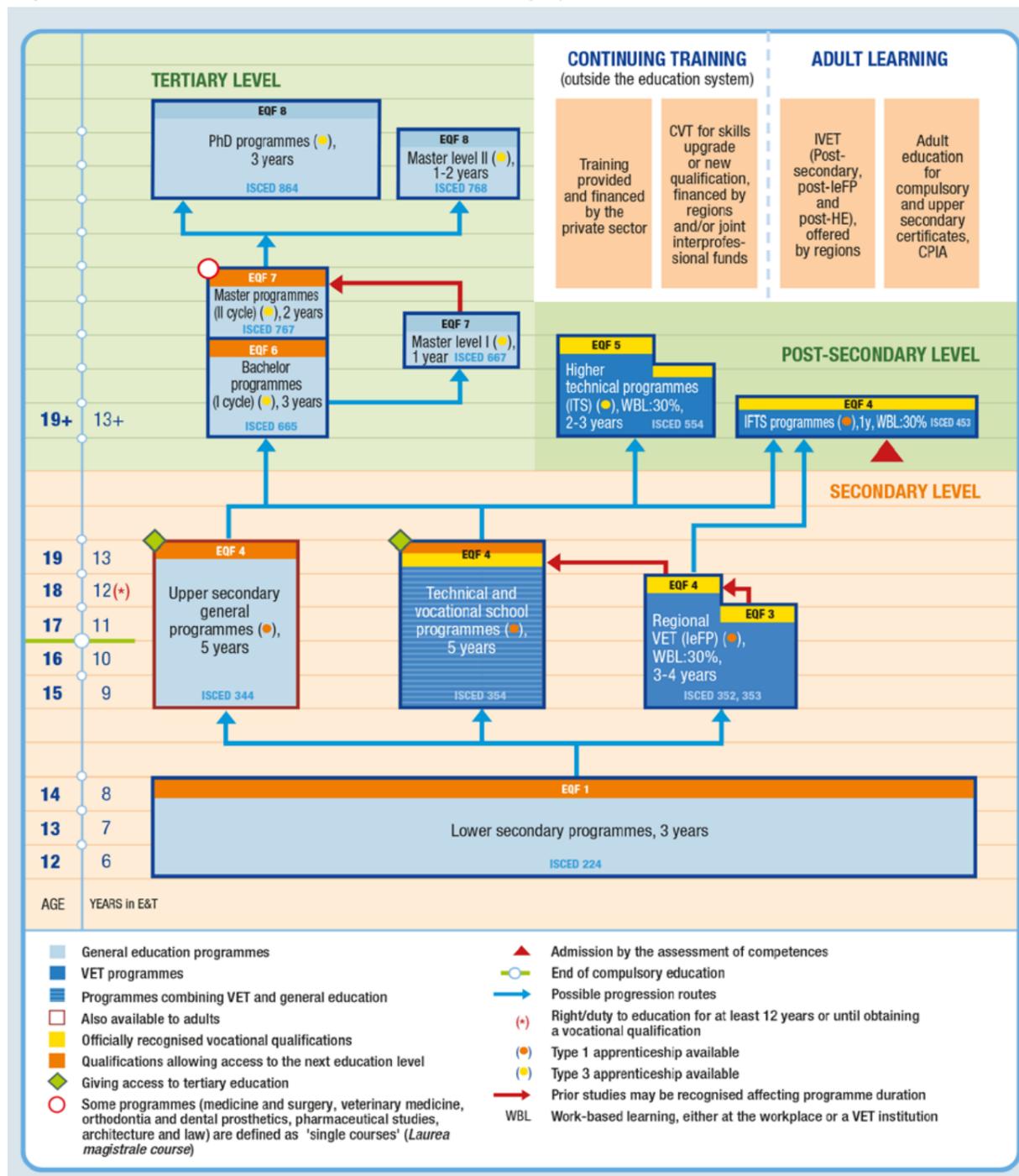
At the post-secondary level, the Italian system features higher technical training (IFTS, ITS) and short programmes or courses, whereas tertiary education is divided into higher education programmes at the university and higher education programmes at non-university institutions.

In terms of provision of VET, two important features should be mentioned:

- **Apprenticeships,** which are regulated by a framework providing three types of apprenticeships: apprenticeship for Vocational Qualification and Diploma, Upper Secondary Education Diploma and High Technical Specialisation Certificate (Type 1); Professional Apprenticeship (Type 2); and Higher Training/Education and Research Apprenticeship (Type 3).
- **School-work alternance:** in technical and vocational schools, students have 400 hours a year of on-the-job training experience spent in a company.



FIG. 18: ITALIAN EDUCATION SYSTEM



NB: ISCED-P 2011
Source: Cedefop and ReferNet Italy

SPAIN

The Spanish initial vocational education and training system (IVET) is organised at basic (lower secondary), intermediate (upper secondary) and higher (tertiary) levels. Upper secondary education comprises:

- **High school** (which is the general academic route – bachillerato in Spanish) with the achievement of the education diploma (título de Bachillerato).
- **Intermediate VET**, which consists of 2000 hours of training divided into two academic years, awarding a Technician Diploma (título de Técnico).

With regard to tertiary education, the duration of Higher VET programmes is 2000 hours over two academic years.

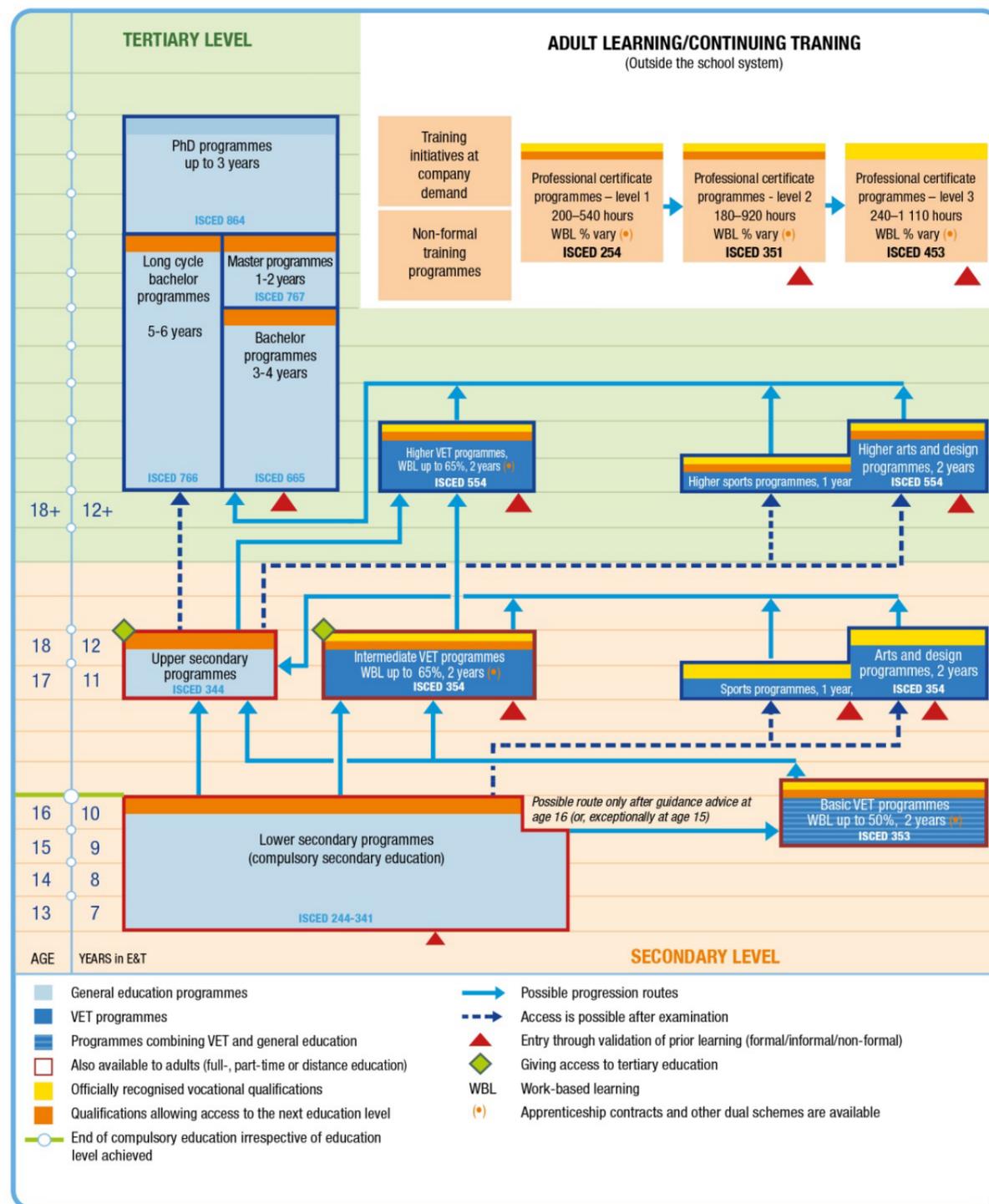
As shown in Figure 19, the VET system is very flexible, affecting not only the vertical progression in VET, but also the horizontal flow between different educational programmes. The arrangements for the different VET levels are very similar and all VET studies include a compulsory work placement module (formación en centros de trabajo – FCT) that takes place within a company. The duration of this module varies from 240 hours in basic VET to 400 hours in the two other VET programme levels.

In terms of VET governance, the following are the main responsible bodies:

- **Ministry of Education and Vocational Training**, which sets the national framework for VET
- **Ministry of Labour**
- **Regions:** these are in charge of the legislative development and management of education within their jurisdiction and responsible for issuing Professional Skills Certificates (CAPs)
- **Social Partners:** most of the training institutions are tripartite with the involvement of social partners and government bodies, although the role of the social partners is decreasing
- **Instituto Nacional de las Cualificaciones (INCUAL)**, which is in charge of administrative activities



FIG. 19: SPANISH EDUCATION SYSTEM



NB: ISCED-P 2011. The Spanish education system is not referenced to EQF levels.

Source: Cedefop and ReferNet Spain.



SWEDEN

In Sweden, the compulsory schooling age is 16, after which students choose one of the 12 existing vocational programmes (yrkesprogram) or one of the six existing general higher education preparatory programmes (högskoleförberedande program) in upper secondary schools (gymnasieskola). VET is provided at the following levels:

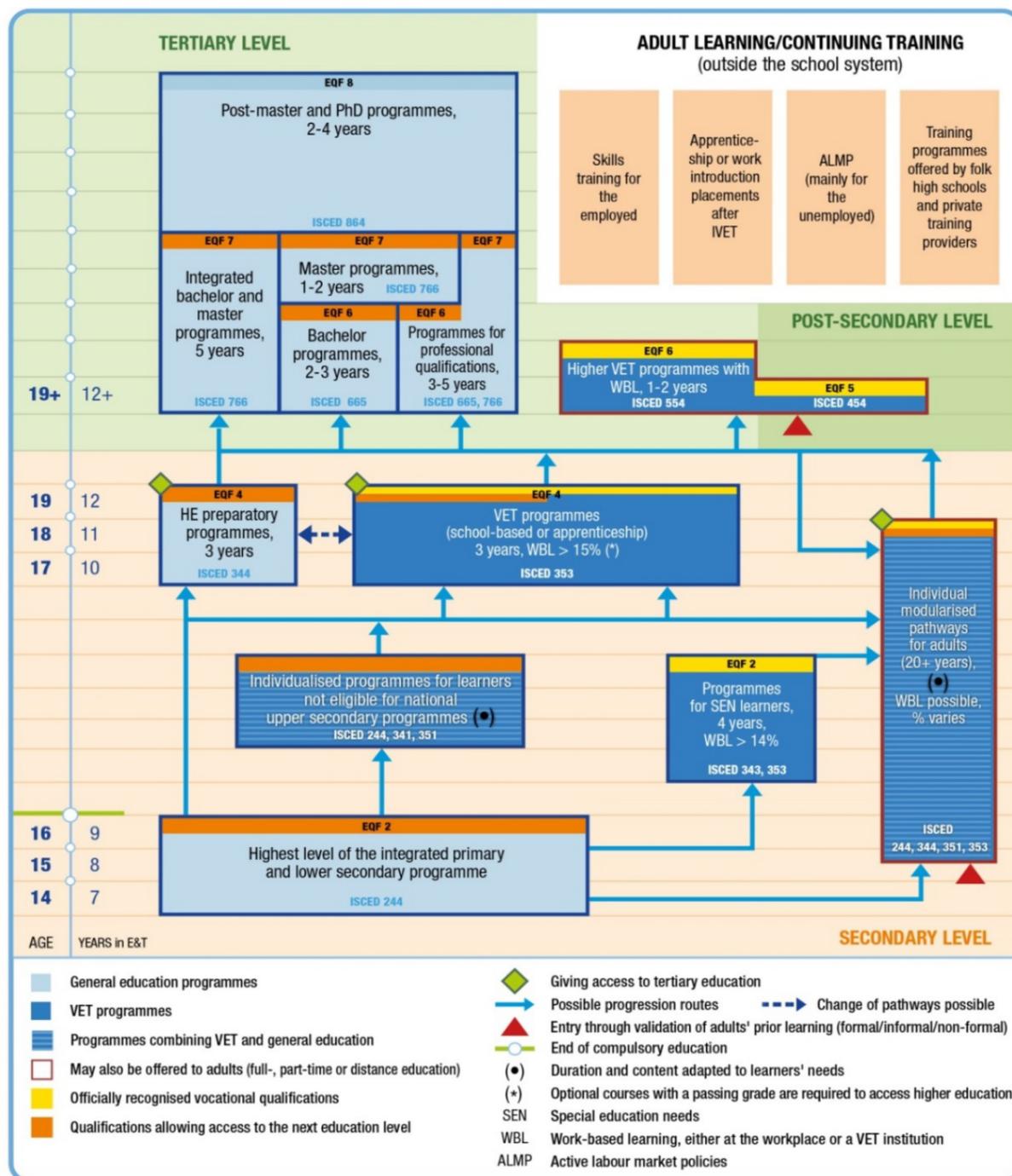
- **VET at the upper secondary level:** this consists of national vocational programmes that aim to prepare students for the labour market. Students in vocational programmes can choose either a 'school-based education' (skolförlagd utbildning) or an 'apprenticeship education' (lärlingsutbildning).
- **Tertiary VET programmes:** these are offered at universities of applied science (yrkeshögskolan) in cooperation with employers and industry.

However, there are also other forms of VET providing both initial and advanced VET. These are:

- **Working life education,** where the labour market partners cooperate in vocational boards (yrkesnämnder) and competence councils (kompetensråd). They may be responsible for deciding on apprenticeship periods, carrying out trade and journeyman examinations and issuing trade certificates.
- **Liberal (non-formal) adult education** (folkbildning), which consists of non-formal 'free and voluntary' learning, offered outside the school system. It covers education in folk high schools (folkhögskolor) and adult education associations (studieförbund) that are not restricted to state-determined curricula or syllabi.
- **Labour market policy programmes,** governed by the Swedish Public Employment Service (Arbetsförmedlingen), which is responsible for programmes aimed at strengthening individuals' opportunities to obtain or keep a job. Several of the programmes consist of vocationally-oriented education or various forms of work placement.
- **Private VET,** which are provided by companies and other organisations. These are quite flexible in duration and coverage of vocational areas. They are not state regulated, nor is there quality assurance, even though training input may be approved by an industry organisation and may lead to the student taking a journeyman or final examination.



FIG. 20: SWEDISH EDUCATION SYSTEM



NB: ISCED-P 2011.

Source: Cedefop and ReferNet Sweden.



2.4 BEST PRACTICES IN EUROPE: CODING AND SHARING GOOD PRACTICES

A practice is characterised as a “best practice” for the effectiveness of the results achieved, for its quality and innovativeness, and for the way in which it satisfies a need or offers a solution to any problem that may arise. It is useful to share and disseminate good practices so as to nurture new ones in different contexts (so-called cross fertilisation, where a mix of ideas, customs, etc. of different places or groups of people produce a better result) or represent an effective reference for coming up with ideas, information and useful solutions for moving on to new development steps.

This activity was aimed at analysing the existing best practices in capacity-building strategies and skills intelligence anticipation and harmonisation in Europe. The detailed results of the best practices analysis are available in Appendix B of the report.

The collected best practices were introduced to the stakeholders during the national capacity-building workshops to show first of all how, in different European countries, one or more aspects related to the anticipation of skills have been resolved; and secondly, to facilitate the work of analysing the situation in the specific national context of the five target countries, as well as the development of a first roadmap that identifies the actions to be carried out (if possible, following the good practices already in use in other countries or sectors).

A great variety of practices are available in Europe at the national, regional and sectoral level regarding capacity-building strategies and skills intelligence anticipation and harmonisation, as well as efforts by social partners on how to address skills gaps and design training programmes that can reflect the transformation of the electricity sector. Most of the best practices implemented at the country level may be influenced by national legislations and regional/sectoral “traditions”, and a best practice in one country could become a non-applicable practice in another. However, it is possible to group practices into main areas regarding capacity-building strategies and skills intelligence, as all of them are based on the same main facts and address some common topics.

Regarding the main facts, it should be emphasised that:

- **Different players** (employers, employees, social partners, VET providers) have different points of view and (skills) needs interpretations due to their own natural biases
- **Employers and employees need support** regarding skills mapping, provision of and participation in employee training, and social partners are (all) key players in this regard
- A general **lack of financial resources** is one of the main obstacles to collecting/anticipating skills needs and training
- **Time restrictions** are an important obstacle to collecting and anticipating skills needs

With regard to the common topics across countries, the following should be taken into account:

- **Heterogeneity of stakeholders:** to achieve a comprehensive anticipation and identification of skills needs, European, cross-sectoral, national and regional approaches are welcome. The strategic inclusion of more players in the process of anticipating and identifying skills needs has proven to be a successful practice towards obtaining useful, broad information on future skills developments.
- **Mobilising resources:** social partners can play a role in communicating the benefits of training among their members and thereby raising the overall awareness of further training opportunities for all employees; as time and resources (and of course money) are a bottleneck for all the players involved, good practices suggest adopting a clear and anticipated long-term plan (essential for allowing all involved stakeholders to have an active presence).
- **Information, support and guidance:** informing both employers and employees of available training offers and offering effective support (social partners) and guidance are key issues; the further development of online tools that make it easy to perform “skills-need queries”, search “training offers available” and provide information about training course quality are helpful practices for gathering skills needs and raising awareness of training opportunities. In this regard, good practices suggest that independent information from a neutral third party concerning employees’ career prospects or employers’ business needs may be beneficial, as this approach can help alleviate potential conflicts of interest.



2.5 MAIN PRINCIPLES

The high-level workshop organised in September 2019 to validate the results of the in-depth analysis identified the best possible means of transferring the results to the national level through the capacity-building workshops by providing a precise pathway and definition of the expected outcomes of the national capacity-building workshops.

Three important issues mapped at the beginning of the project were discussed in order to understand how to better support national partners in managing the ongoing energy transition:

1. Skills matches in the education and training offerings
2. Strengthening relations between VET providers and national social partners on skills intelligence
3. Developing joint strategies for monitoring and competence planning in the electricity sector

The analysis of these issues combined with the results of previous research led to the definition of and prioritisation of four main principles on the theme of strengthening cooperation between training providers and social partners as part of a skills anticipation strategy, as shown in Table 1:

TABLE 01: FOUR MAIN PRINCIPLES FOR STRENGTHENING COOPERATION BETWEEN TRAINING PROVIDERS AND SOCIAL PARTNERS AS PART OF A SKILLS ANTICIPATION STRATEGY

MAIN PRINCIPLE		DESCRIPTION
1	GET TO KNOW EACH OTHER BETTER	Knowing each other better in order to understand each other's needs, concerns and interests
2	INTERACTION PLATFORM	Tools that facilitate the dialogue, mutual knowledge and skills transfer
3	COMMON LANGUAGE	Establish a common glossary to understand each other
4	MUTUAL POTENTIAL ADVANTAGES	Understand needs and requirements to find good solutions for everyone (so-called "win-win" solutions)

Subsequently, the four main principles were further broken down into 16 key Issues, as described below.

TABLE 02: "GET TO KNOW EACH OTHER BETTER" KEY ISSUES

1. GET TO KNOW EACH OTHER BETTER

KEY ISSUE		DESCRIPTION
1.1	VET OFFERING	Knowing the current training offering at the national, regional and/or local level is essential for establishing the "starting point"
1.2	TRAINING NEEDS	Training needs depend on the process of anticipating skills, by knowing what skills the sector will need in the next ten years, which in turn is a function of analysis and sectoral trends.
1.3	ORGANISATIONAL STRUCTURES	Each partner involved in the skills anticipation process has its own internal organisation with specific tasks and responsibilities.
1.4	CORRECT TIMING	Knowing the timeframe of activities of each partner involved in the process of anticipating skills is key for an effective collaboration.
1.5	BARRIERS AND RESISTANCE	It is crucial to know the barriers and strengths of each partner involved in the skills anticipation process

TABLE 03: "INTERACTION PLATFORM" KEY ISSUES

2. INTERACTION PLATFORM

KEY ISSUE		DESCRIPTION
2.1	DIGITAL TOOLS	The use of digital technologies is essential in order to share information and make it available to all partners involved in the process of anticipating skills
2.2	DEDICATED PUBLIC (AND NON-PUBLIC) MEETINGS	Career opportunities in the sector aimed at young people and professionals in need of upskilling/reskilling
2.3	REGIONAL PERSPECTIVE	The interactions between partners involved in the process of anticipating skills must take place at the national and regional levels in order to exploit and understand all the peculiarities
2.4	FINANCIAL SUPPORT	Management and maintenance of the platform (not only at an economic level but also in terms of time dedicated and people involved)
2.5	TRAINING FOR STUDENTS AND TEACHERS	Once the skills have been identified, it is essential to update programmes and train the trainers

TABLE 04: "COMMON LANGUAGE" KEY ISSUES

3. COMMON LANGUAGE

KEY ISSUE		DESCRIPTION
3.1	GLOSSARY	It is crucial to have a common terminology among partners involved in the skills anticipation process. Clear terminology also means an unequivocal identification of occupations and allows for an identification of competences, skills and knowledge of the profiles
3.2	DEFINITION OF VET PROVIDERS	Identifying which categories of institutions are within the framework/ scope of the project

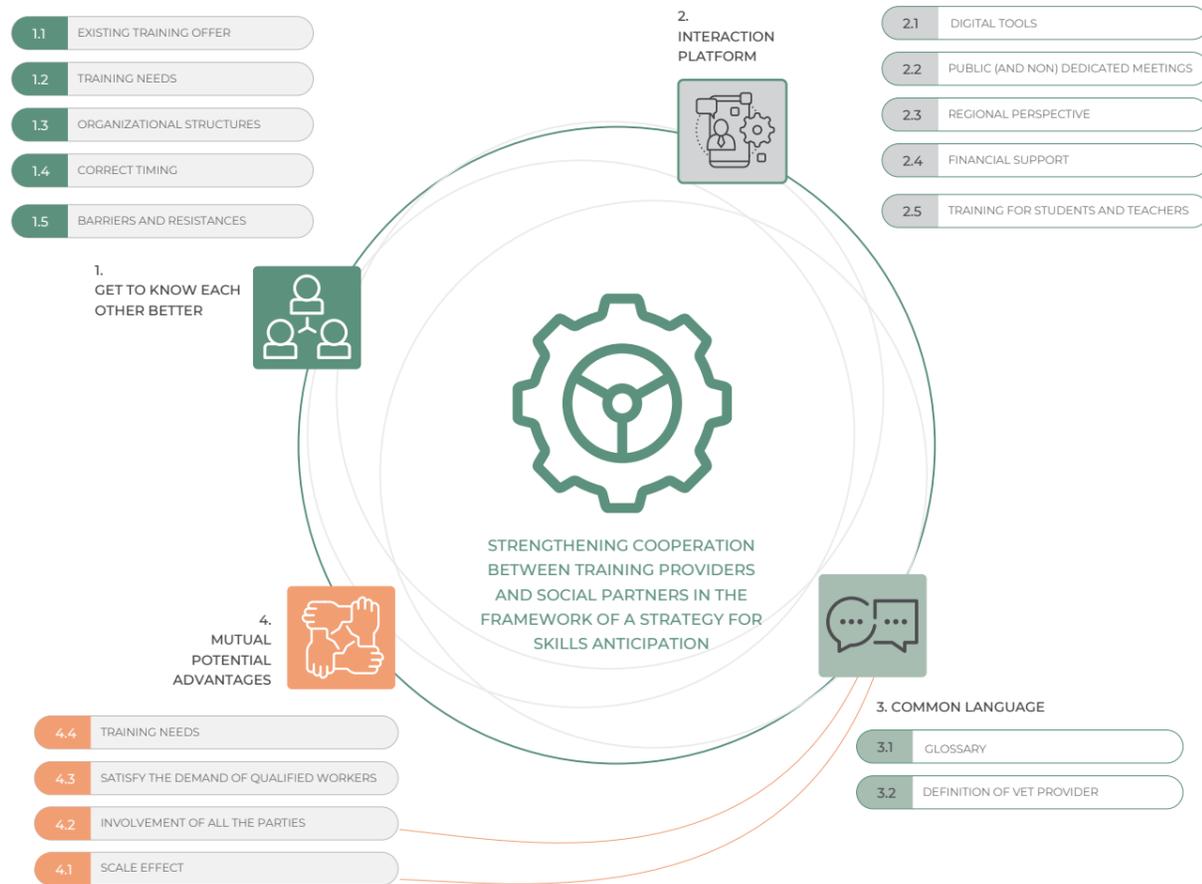
TABLE 05: "MUTUAL POTENTIAL ADVANTAGES" KEY ISSUES

4. MUTUAL POTENTIAL ADVANTAGES

KEY ISSUE		DESCRIPTION
4.1	SCALE EFFECT	The multiplier benefit effect is activated when each partner involved in the skills anticipation process adapts its strategy to meet the needs of other partners
4.2	INVOLVEMENT OF ALL PARTIES	To obtain mutual benefits, it is useful to involve parties both directly and indirectly involved in the process of anticipating skills and to add external third parties for the benefit of impartiality
4.3	MEETING THE DEMAND FOR QUALIFIED WORKERS	The main benefit that derives from an effective process of anticipating skills is providing skilled workers to the industry
4.4	PROMOTING AND FOSTERING INNOVATION	Quite often, a practice in one area/sector can become a best practice in another. Technology transfer is considered a fundamental tool for facilitating radical innovation between sectors that are very different from each other

The four main principles and the respective 16 key issues are represented more comprehensively in Figure 21.

FIG. 21: THE FOUR MAIN PRINCIPLES AND 16 KEY ISSUES



3. CAPACITY-BUILDING WORKSHOPS: FRANCE, HUNGARY, ITALY, SPAIN AND SWEDEN



3.1 COMPARATIVE ANALYSIS OF COUNTRIES

The outcomes identified at the European level were presented during the capacity-building workshops, providing the baseline for the national discussion and analysis. Each country had the opportunity to elaborate, translate and adapt these outcomes according to the specificities of its national context so as to create an ad hoc national sectoral roadmap.

For this purpose, each country was invited to reflect on the four previously identified “main principles” and 16 “key issues” (see item 2.5) by providing information about a) their relevance for each national context and b) possible practices to be adopted. For each “key issue”, an example of an associated best practice already identified across Europe was also mentioned to help participants get to the core of the discussion⁹.

Once the outputs from the five countries were collected, a comparative analysis was carried out by using a bottom-up approach: contributions, suggestions and issues were analysed and finally grouped around common themes to better understand what the situation was for each country regarding skills intelligence in the electricity sector.

From a more general point of view, the three common topics that emerged at the European level were confirmed for, and relevant to, the five countries of this study¹⁰. Several times, in fact, the need for the following was stressed:

- Involving a heterogeneous set of stakeholders (companies, social partners, VET providers, national authorities) bringing different points of view to the table
- Mobilising resources, as a general lack of financial resources and time restrictions are key obstacles to:
 - Collecting/anticipating skills needs
 - Elaborating training (upskilling and reskilling)/new curricula
 - Creating a durable/regular exchange process
- Having structured information and sectoral data both on education and training provision as well as on occupations/professions and skills that are needed by the industry

However, the more detailed analysis of the outputs from each country demonstrates that the three topics above can be further elaborated, evidencing some key common themes and implementing activities (as explained below). At the same time, each country has its peculiarities, especially with regard to the sphere of action (whether regional or national): this will be elaborated on at the end of the chapter.

⁹ The methodology that was applied and the results for each country can be found in Appendix C.

¹⁰ The three common topics identified at the European level are explained in item 2.4 and are:

- Heterogeneity of stakeholders
- Mobilising resources
- Information, support and guidance



3.2 KEY THEMES IN THE ELECTRICITY SECTORS OF FRANCE, HUNGARY, ITALY, SPAIN AND SWEDEN

1. ADDRESSING A FRAGMENTED EDUCATION AND TRAINING OFFERING

All countries reported that the education and training offering is often varied and complicated. This heterogeneity makes the supply of education and training very difficult to understand and map for a wide range of stakeholders, including young people, job seekers and companies at different levels. More specifically, the perception from all countries is that such an offering should be better adapted to the current and future needs of the industry.

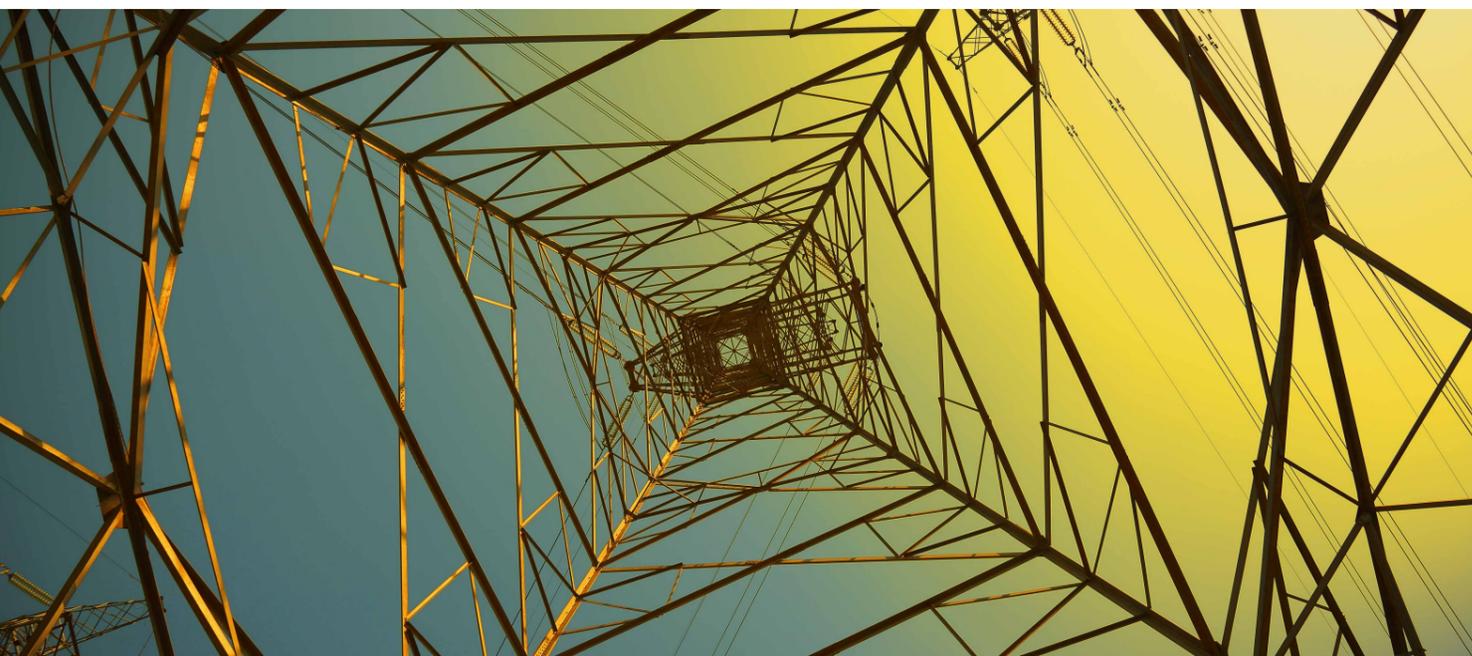
Italy and **France** stress the fragmentation of the sectoral training and education offering, which often tends to reflect more regional levels and is not aligned with the broader national system.

In **France** in particular, there is the perception that training provision is more directed towards the needs of single companies, and not for the benefit of professions in general.

In **Hungary**, education and training providers are consolidated but not connected to each other.

The same happens in **Sweden**, where there is an urgent need for greater geographical spread of training providers, as well as for longer-term planning and coordination: training is indeed arranged according to more immediate short-term needs.

For all five countries, the provision of a **unified interface/platform/database** where all sectoral courses are mapped and listed is perceived as highly beneficial. At the moment, in Hungary there is a national database (by the Central Statistical Office, KSH)¹¹ but no single interface for the electricity industry exists where all secondary and higher education training courses appear separately. The **French** online platform "DATA DOCK"¹² that maps out training providers is a great example of a



step in this direction, although France itself states the need for improving this online system with personalised support for people seeking training – complementing it with tools such as tutorials and interactive guidance. A unified sectoral platform is also highly needed in Italy, where there is already useful material such as the “Atlas of Professions” developed by INAPP (the National Institute for Public Policy Analysis). In this regard, the national agency “ANPAL” can play an important role in activating it and harmonising the information. Similarly, in **Spain** the training offering could be more easily explored thanks to a unified platform, especially with regard to courses at the higher education level. The feasibility reports on qualifications produced by INCUAL (National Qualifications Institute)¹⁵ is a good example of a step in this direction.

With a view toward having a consistent overview of the sector, not only would these platforms bring together training providers and available training offerings, they would also integrate more complementary information, particularly the specific demand from the industry, i.e. what companies need in terms of skills, competences and professions¹⁶.

¹¹ <https://www.ksh.hu/?lang=en>

¹² <https://www.data-dock.fr/>

¹³ https://atlantelavoro.inapp.org/atlante_professionisti.php

¹⁴ <https://www.anpal.gov.it/>

¹⁵ <https://incual.educacion.gob.es/>

¹⁶ This is extensively explained in item 2 below, “Having a coordinated understanding of skill needs from companies”.

2. HAVING A COORDINATED UNDERSTANDING OF SKILLS NEEDS FROM COMPANIES

A unified, clear and detailed mapping of sectoral training provision cannot be 100% efficient and effective without proper coordination and matching with what the demand is from the industry in terms of skills and competences. In particular:

As emphasised by **Sweden**, both trade unions and employers stressed the gap between training models and what is currently practised in the sector. Often, the offering in Sweden is determined to a greater extent by the interests of students, and not the needs of companies.

As reported by **Hungary**, skills anticipation is mostly done at the company level but exchanges between stakeholders are not always allowed (due to closed intranets).

This is also true for **Italy**, where companies tend to not share their work and best practices to strengthen the process of skills anticipation for the entire sector.

For each country, the description of the types of competences that are needed should be coordinated so as to support companies in the difficult process of identifying the main drivers of change of the sector that will ultimately affect skills and future job roles. In France for example, a common language describing occupations and competences that ensures training is adequate to the business models can consist of:

- Occupation name
- Occupation work context
- Skills related to the occupation
- Skill name
- Skill description
- Skill level

Companies in **Spain** are not very confident in setting out their strategies. This is crucial also for **Hungary** and is inevitably linked to the fragmentation of the training offering explained above, which often leads to a vicious cycle: educators and trainers have no insight into what is needed in terms of skills and competences, so it is difficult for them to build tailored courses. Indeed, their resistance may depend to a great extent on whether they know clearly what to do and if there is enough time for implementation: teachers and professors need to be made aware of the goals and challenges they work toward.



Efforts from both sides are needed, with the key support of social partners, national authorities and employment agencies (as in the case for Italy where the organisation Formatemp¹⁷ can be involved, since it is comprised of skills selectors and training providers). This inevitably requires the necessity of setting up or strengthening already existing coordinating authorities at the strategic/sectoral level. Many examples were raised by the five countries: in Italy, the role of ANPAL is indeed key, as is one of the “Observatoires” in France and FUNDAE¹⁸ in Spain. In Hungary, it is crucial to establish Sector Skills Councils with support from the government. A coordinating entity not only will ensure that all voices are listened to and a proper match between supply and demand is implemented, but will also ensure that competency profiles are constantly updated as the sector evolves.

¹⁷ <http://www.formatemp.it/>

¹⁸ <https://www.fundae.es/>

3. TACKLING THE FINANCIAL BURDEN

As already mentioned at the European level, financial constraints are usually a bottleneck for all parties at different levels of implementation. When analysing this subject at the national level, it becomes evident that such a burden has a dual nature.

On one hand, as specified by **France** and **Spain**, there is a lack of information and overview regarding existing funds as well as knowledge on how to access European and national grants. On the other hand, it is not clear how to share and maximise the available funds or how to support this process.

In **Sweden**, funding for education is available for students through government loans, even if training is indeed expensive.

In **Hungary**, dual training has just been established, but it is not possible at the sectoral level - only at the corporate level. The new Hungarian Vocational Training Act expressly proposes the creation of sectoral training centres, but so far only the pharmaceutical industry has created one. In addition, there is a lack of funding for research and development even if there is currently a form of collaborative PhD training: this is a new element where the government offers scholarships for the achievement of academic levels and provides aid both to universities and PhD students. Cooperation between universities and companies is also strengthened through the involvement of company staffs.

As emphasised by **Sweden** and also echoed by other countries like **Hungary** and **Italy**, the **role of the government** is crucial in setting up a plan for skills development and financing for the sector. Also, the sharing of costs between employers and governments for training within the sector could be improved. To secure the future supply of skills, the costs of training should be distributed fairly and governments are requested to contribute to the financing.

4. ATTRACTING YOUTH AND LEARNING FROM OTHER SECTORS

Although not specifically addressed at the European level, attracting a new young workforce and learning from other industries' experiences were recurrent themes raised by the five countries.

Regarding connections with other sectors, all countries stress the need to learn and coordinate with other industries to share experience, but above all, for planning for the benefits of training investment. There is indeed insufficient inter-sectoral coordination and cooperation (for example between construction, TLC, mechanics, automotive, legal, etc.).

With regard to the issue of attracting young workers to the sector, the five countries are implementing several actions.

In **Sweden**, employers are active in trying to attract secondary school students to choose electricity courses in upper secondary school, although it is difficult to attract applicants to courses in energy. Efforts are being made by Energiföretagen¹⁹ through the organisation of the so-called “EBR (Elbyggnadsrationalisering)” days.

In **Hungary**, many professional days and expos are organised by the Electro Technical Association²⁰, and there are several student competitions and science fairs, but they sometimes tend to be obsolete. This is accompanied by a general difficulty in finding future engineers.

Career days are also organised by Italy, France and Spain (the latter through the “AULA Madrid”)²¹.

To overcome the problem of attracting young people, many options were put on the table.

In **Hungary**, it is important to outline career opportunities before students specialise, and to improve the synergies between companies and training providers. Also, the leveraging of available

scholarships should be taken into consideration.

In **Italy**, the involvement of families is key: more information should be disseminated to them to generate a widespread electricity sector “culture”. Moreover, career guidance stakeholders should be more extensively involved, and the figure of the mentor/tutor needs to be reinforced.

Finally, **France** needs both a qualitative and a quantitative measurement of the effectiveness of such initiatives to be introduced. At the same time, the use of more interactive tools (such as virtual reality) is perceived as beneficial in getting young people interested in the sector.

¹⁹ <https://www.energiforetagen.se/>

²⁰ <https://www.mee.hu/>

²¹ <https://www.ifema.es/en/aula>

PECULIARITIES: REGIONAL/NATIONAL DIMENSIONS

The sphere of action for the implementation of the above themes must take into account each country’s own geography, its distribution of regions and the level of autonomy attributed to them.

In **Sweden**, the regional perspective is important in assessing training needs and understanding what training is offered there, but at the same time coordination among regions is crucial to understanding the country’s sectoral position.

In **Hungary**, the reduced size of the country does not allow for defining skills needs on a regional scale; nationwide coverage is therefore more favourable.

In **Italy**, a recurring problem is that of merging the regional and national dimensions, as regions are usually the players that define training priorities.

In **France**, companies are sometimes not aware of all the training courses at the regional level, and the levels of training on offer varies from region to region. Also, it so happens that the regional and national training offerings often overlap: given the size of the country, the regional dimension is certainly relevant, but there is a need to develop both levels in parallel.

Finally, in **Spain**, autonomous regions deliver vocational training. In this regard, there is often uncertainty as to the level of power transferred to autonomous regions due to constant legislative changes. There is also a need to establish nationwide regulations.

4. CONCLUSIONS AND NEXT STEPS

The present report summarizes the different project activities aimed at implementing specific policy recommendations²² for the electricity sectors in France, Italy, Spain, Hungary and Sweden. Through a mixed-method approach, the main goal was to support stakeholders at different levels (European social partners, industry, national social partners, education and training providers and relevant public authorities) in implementing strategies for anticipating change, with the objective of overcoming the skills supply/demand mismatch and building joint strategies for continuous skills forecasting and supply adaptation.

CHAPTER 2

Provided an analysis of the EU electricity sector, showing that “electric power generation, transmission and distribution” generated a turnover of EUR 1.289 billion throughout the EU28-, and Germany (2018 Eurostat data) was the largest country in terms of turnover followed by Italy, the UK, France and Spain; the top 10 countries represent %88 of the total.

Additionally, an overview at the EU level regarding available best practices on capacity-building strategies and skills intelligence anticipation and harmonisation was provided. This exercise shows that all best practices are based on the same main facts and address some common topics. Best practices are fundamental; although each country has its own peculiarities, some best practices address and solve common issues, and therefore they can be – with minor adaptations – implemented to serve each national context.

²² The three main recommendations are (as specified in the introduction):

RECOMMENDATION 1

strengthen the role of social partners in the interaction with VET providers.

RECOMMENDATION 2

maintain and update sectoral intelligence on skills needs, in order to revise strategies and actions periodically.

RECOMMENDATION 3

summarise best practices identified during this project and define practical approaches and capacity-building projects in order to spread them across Europe.

CHAPTER 3

Was the core of the project: the national capacity-building workshops stimulated exchange and mutual knowledge among stakeholders in the context of VET in the electricity sector, **enabling the identification of relevant key themes that national stakeholders can follow as main recommendations at national level:**

- 1 Encouraging a continuous and comprehensive dialogue between the various stakeholders to strengthen skills intelligence, anticipation of labour market and skills needs trends and facilitate the planning of the corresponding VET supply.
- 2 Address a varied and fragmented training offer by setting up a unified interface/platform/database where all sectoral courses are mapped out and listed. This platform should also integrate the complementary information deriving from the industry itself (skills, competences, professions etc).
- 3 Have a coordinated understanding from companies on the type of skills and competences they are looking for. Here, the role of a coordinating authority at strategic/sectoral level is key.
- 4 Tackle the financial burden: important is a repository of available regional, national and European funds. Here, the role of the government is important in proposing a plan for skills development and financing for the sector.
- 5 Attracting a new skilled workforce and learning from best practices from other sectors: there is a need to learn and coordinate with other industries as well as reflect on strategies to make the sector more attractive by improving tools, HR strategies and synergies between companies and training providers.
- 6 Consider the regional and/or national coverage of actions, as some countries have a more nation-wide strategy, whereas others leave more autonomy at regional level.

This report can serve as a roadmap containing practical messages and capacity-building guidelines to be used not only by the five target countries, but also across all of Europe. This will contribute to promoting and improving the role of education and training providers together with social partners to build efficient and effective skills intelligence for the benefit of the electricity sector.



APPENDIX

A. PRACTICAL GUIDELINES FOR SOCIAL PARTNERS²³

Table 6 below presents a set of practical guidelines for social partners that can be taken into consideration for the purpose of building and reinforcing social dialogue to strengthen the role of national social partners and VET providers in building skills intelligence in the electricity sector.

Table 6: Practical capacity-building guidelines

MAIN PRACTICAL ACTION		WHEN	HOW TO IMPLEMENT
1	UPDATE RESEARCH ON SECTORS' DRIVERS OF CHANGE	Before the first official meeting	1.1 Reading existing literature regarding the sector 1.2 Mapping main drivers of change 1.3 Creating a survey and engaging main sector stakeholders (companies, trade unions, VET providers)
2	IDENTIFICATION OF PROFESSIONAL PROFILES (AND RELATED SKILLS) INFLUENCED BY DRIVERS OF CHANGE	Before the first official meeting	2.1 Analysing (web) vacancies from the largest national job advertising portals 2.2 Mapping and ranking vacancies and skills needs
3	ENGAGEMENT OF COMPANIES IN DATA VALIDATION	Before the first official meeting	3.1 Organising a workshop where companies and unions are invited 3.2 If possible, adding "external" stakeholders (not directly involved into the sector) to obtain a different point of view 3.3 Presenting and validating results 3.4 Sharing possible future sector directions
4	MAPPING VET OFFER	Before the first official meeting	4.1 Mapping the available VET courses for the sector, creating an available "training catalogue"
5	CREATING A LIST OF STAKEHOLDERS TO INVOLVE IN THE SKILLS ANTICIPATION PROCESS	Before the first official meeting	5.1 Listing people from employers' organisations and trade unions 5.2 Adding people from government ministries 5.3 Engaging VET providers at different training levels
6	PLANNING THE FIRST MEETING ACCORDING TO AVAILABILITY OF ALL PARTICIPANTS	Before the first official meeting	6.1 Creating a mailing list of people identified in item 5 6.2 Contacting most of them and finding their next availability 6.3 Setting up possible dates 6.4 Sending invitations to a suitable location (logistic point of view) for all participants

7	ESTABLISHING FINANCIAL NEEDS	During the meeting	7.1 The social dialogue process needs financial support. Involved stakeholders require support to continue with the activities 7.2 Government, national social partners should create a repository of available regional, national and European funds 7.3 Presenting and discussing financial needs and opportunities
8	PRESENTING OFFICIAL DATA (DRIVERS OF CHANGE, COMPANIES' VISION AND CURRENT VET OFFERING)	During the meeting	8.1 Presenting and discussing the results from the previous analysis
9	PLANNING A ROADMAP	During the meeting	9.1 Analysing the gap between "demand" of skills and competences and current VET "supply" 9.2 Supporting VET in planning courses and training programmes responding to the gaps 9.3 Supporting VET in training the trainers
10	PLANNING THE NEXT MEETINGS	During and after the first official meetings	10.1 One item on the agenda must be "next meeting date" 10.2 If possible, plan a recurring (twice-yearly) meeting
11	SHARING RESULTS	After each planned meeting	11.1 Results should be disseminated to all (possible) interested stakeholders to involve them in a continuous improvement process

²³The present guidelines are not country-specific and should be viewed as useful steps or potential building blocks for countries where social dialogue does not exist or is weak

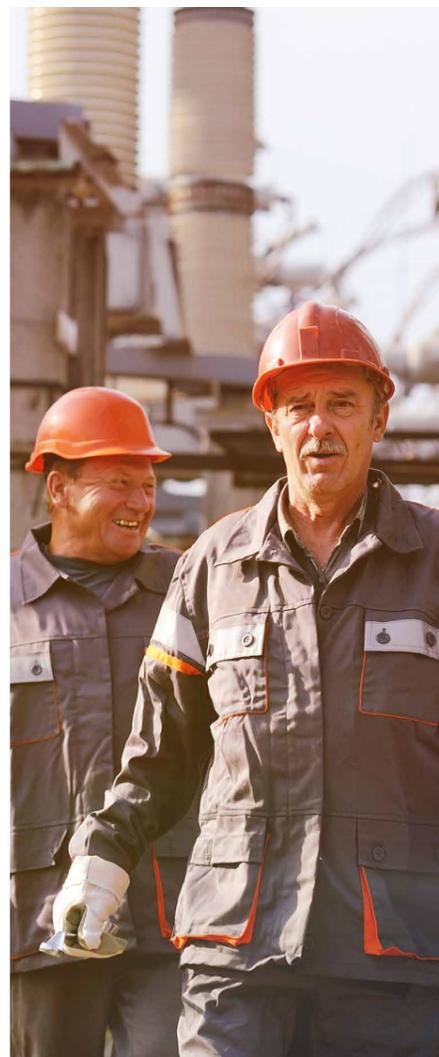


B. LIST OF BEST PRACTICES ACROSS EUROPE

The following tables present the best practices (BPs) collected across Europe with regard to capacity-building strategies and skills intelligence anticipation and harmonisation. For each BP the following parameters have been used:

- Brief description of the BP: description of the best practice, purpose, how it works
- Key stakeholders: the main players involved in this practice
- Specific benefits: the potential and real advantages the BP has brought
- Conditions for success: what is needed for the BP to work well

The BPs cover the following countries: Austria, Estonia, Finland, France, Germany, Italy, Portugal, Spain, Sweden and the UK.



AUSTRIA CONSULTANT BOARD FOR THE IDENTIFICATION OF QUALIFICATION NEEDS AND TRAINING PROGRAMMES

DESCRIPTION PARAMETERS	DETAILS
Brief description	Arbeitsmarktservice (AMS) is a consultant board and consists of researchers, social partners, governmental representatives, sectoral experts, and employers. Its aim is to identify qualification needs and determine training programmes for the unemployed.
Key stakeholders	Research centres, sectoral experts, VET providers, companies, employers, trade unions and governmental representatives.
Specific benefits	A good mix of research analysis and practical experience combined with a realistic view of possibilities and training providers' capacities.

CROSS-SECTOR APPRENTICESHIP INITIATIVE TO HIGHLIGHT THE ADVANTAGES OF DUAL TRAINING

DESCRIPTION PARAMETERS	DETAILS
Brief description	To strengthen the image of apprenticeship, Z.l.ö. (zukunft.lehre.österreich), which is an independent, non-profit, cross-sector initiative (the largest apprenticeship initiative in Austria with more than 130 member companies) aims to highlight the advantages, possibilities and opportunities of apprenticeships, permanently improving the reputation of dual training in Austria. This is achieved through a wide range of promotional, networking and other activities.
Key stakeholders	Non-profit, companies, education and training providers, students/apprentices/young workers
Specific benefits	Promoting a new image of apprenticeship Tackling skill shortages Identifying the demands of different stakeholders

ESTONIA

FORECASTING ANALYSIS OF NEEDS FOR LABOUR AND SKILLS FOR ESTONIA'S ECONOMIC DEVELOPMENT

DESCRIPTION PARAMETERS	DETAILS
Brief description	Each year, the need for labour and skills is outlined in five OSKA sectors – the Estonian skills and labour forecasting system. The implementation of OSKA is overseen by the OSKA Coordination Council.
Key stakeholders	The Ministry of Education and Research, the Ministry of Economic Affairs and Communications, the Ministry of Social Affairs, the Ministry of Finance, the Estonian Employers' Confederation (ETTK), the Estonian Chamber of Commerce and Industry, the Estonian Service Unions' Confederation (TALO), the Estonian Trade Union Confederation (EAKL) and the Estonian Unemployment Insurance Fund. There are also sectoral expert panels at the Estonian Qualifications Authority that prepare forecasts of labour requirements and skills so as to gather expertise from job creators, schools and public authorities
Specific benefits	OSKA combines labour market projections with qualitative insights from sectors and other sources
Conditions for success	The necessity of the expert panels at the Estonian Qualifications Authority, that prepare forecasts of labour requirements and skills so as to gather expertise from job creators, schools and public authorities

FINLAND

FINANCIAL INCENTIVE FOR UPSKILLING/RESKILLING

DESCRIPTION PARAMETERS	DETAILS
Brief description	Finland has a financial incentive (Joint Purchase Training) that supports employers who wish to retrain existing staff or set up training programmes for newly recruited staff. Offered by the Public Employment Services (PES), it supports employers in defining their training needs, selecting the appropriate candidates for training and finding an education provider to deliver the tailored training. The PES also partly finances the training. Types of training that can be developed: i) Tailored Training for employers who wish to retrain their staff due to technological or other changes in the sector, ii) Recruitment Training for employers who cannot find employees with the skills needed and wish to hire, then train new staff and iii) Change Training for employers who have staff that has become redundant and wish to help them transition to other job opportunities
Key stakeholders	National government, companies, social partners, VET providers
Specific benefits	Supporting companies keeping skills up-to-date by identifying the right training needs and delivering training; removing some of the financial barriers connected to competence development of employees
Conditions for success	Companies' awareness of and commitment to the importance of building the skills of their employees according to the changing nature of jobs

FRANCE

PERSONAL TRAINING ACCOUNT FOR EMPLOYEE TRAINING

DESCRIPTION PARAMETERS	DETAILS
Brief description	The personal training account (PTA) is created by an inter-professional agreement between the social partners; the account "hosts" training hours that the employees acquire during their professional careers as well as the training programmes the employees may apply to.
Key stakeholders	Social partners
Specific benefits	The employee can decide how and when to use this account as the PTA is automatically updated at the end of the year, with the reserve increasing in proportion to the time worked.
Conditions for success	A compulsory contribution paid by companies for employees' vocational and further training.

IN-COMPANY MENTORS FOR NEWLY RECRUITED STAFF

DESCRIPTION PARAMETERS	DETAILS
Brief description	In France the national inter-professional agreement signed by the social partners provided for the establishment of a training standard for in-company mentors (Article 6) and for the establishment of the principles for a charter for quality in-company mentors. On this basis, an in-company mentor should be able to induct an apprentice, contribute to the acquisition of his or her vocational skills, liaise with training institutions that are responsible for training, assessing and monitoring the progress of the apprentice, and participate in training assessment and follow-up. Training to become a mentor generally takes 2 days and leads to an in-company mentor skills certificate.
Key stakeholders	Social partners, mentors, education and training institutions
Specific benefits	Having trainers (who are also employees) with hands-on experience to teach young people Supporting the continuous professional development of in-company trainers
Conditions for success	Motivating and supporting companies to assign qualified mentors Ensuring that the in-company mentors' skills and competences are validated

GERMANY

MULTI-STAKEHOLDER INVOLVEMENT IN APPRENTICESHIP DESIGN

DESCRIPTION PARAMETERS	DETAILS
Brief description	<p>Social partnership is central to the German apprenticeship system, and the Vocational Training Act provides for wide-ranging trade union involvement in the design and implementation of apprenticeship training by means of formal participation in education and training bodies at all levels.</p> <p>At the national level, social partners (trade unions and employers' organisations) are members of the Board of the Federal Institute for Vocational Education and Training. At the regional level, they are members of Regional Committees for Vocational Training which advise the regional governments on apprenticeship training issues. At the local level, they are members of the Vocational Training Committees of the 'Competent Bodies', which are responsible, inter alia, for monitoring apprenticeships and providing advisory services for apprenticeship training.</p>
Key stakeholders	National, regional and local authorities, trade unions, employers
Specific benefits	<p>Heterogeneity of stakeholders ensuring that apprenticeship programmes are broadly defined and meet the existing and future needs of young people</p> <p>Stability and commitment which enhance the attractiveness of apprenticeships for young people</p>
Conditions for success	Active participation of all partners, dedicated time and commitment

ITALY

COMPANY/SCHOOL PARTNERSHIP FOR INTEGRATED DIDACTICS

DESCRIPTION PARAMETERS	DETAILS
Brief description	<p>The Dallara Group is a highly specialised automotive company located in the so-called Italian Motor Valley. Entrepreneurs of the area decided to put their money on apprenticeships. They started by creating a network and a private-public partnership with local upper secondary vocational schools. Since then, the territory has become much more competitive in the automotive sector, highly specialised and has been awarded with a good deal of funding and recognition.</p>
Key stakeholders	Companies, VET schools, trade unions, local authorities
Specific benefits	<p>Increased attractiveness of the educational path in the sector: 300% increase in students locally.</p> <p>Increased competitiveness of the territory, preventing young people from moving elsewhere.</p> <p>Increased employability of students by providing them with workplace awareness.</p>
Conditions for success	Good networking abilities; territorial "network" system which also favours cost sharing by many companies/territorial investment.

ON-SITE VISITS TO COMPANIES TO UPDATE VET OFFERING

DESCRIPTION PARAMETERS	DETAILS
Brief description	<p>A social dialogue project with a high-level expert consultation process in the footwear sector aiming to increase the quality and attractiveness of the VET offering to young students.</p> <p>Key stakeholders collaborate in periodic on-site visits to representative companies in the sector in order to update and orientate the VET offering and specific training needs of the footwear industry.</p>
Key stakeholders	Research centres, VET providers, companies, associations, trade unions.
Specific benefits	<p>Strengthens relations between VET providers and social partners regarding sectoral needs of technological innovation and digitalisation.</p> <p>Orientates the VET offering and curricula and bridges the technological gap between company needs and education and training</p>
Conditions for success	Social partners' proactive role in steering the action at the national level and favouring the conditions for good cooperation between the different players involved.

PORTUGAL

UPDATE BY SECTOR COUNCILS FOR NATIONAL QUALIFICATIONS

DESCRIPTION PARAMETERS	DETAILS
Brief description	<p>The sector councils for qualifications cover 16 industries, act as working groups with technical and advisory competencies in education and TVET policy-making.</p> <p>The main aim is to support the National Agency for Qualification and Vocational Education in updating and developing the national qualifications catalogue.</p>
Key stakeholders	Social partners, training providers, technological centres, ministries, some leading companies, and independent experts.
Specific benefits	<p>Better coordination between public services, education and training providers, employers and workers' representatives</p> <p>Systematic feedback mechanisms between skills needs, qualifications design and TVET provision</p>
Conditions for success	Government awareness of the importance and usefulness of skills needs anticipation and matching processes.

SPAIN

NATIONAL REFERENCE CENTRES FOR SKILLS AND QUALIFICATION NEEDS

DESCRIPTION PARAMETERS	DETAILS
Brief description	National Reference Centres (CRN) are public training establishments at the service of the professional training system. They are considered a main reference for professional education.
Key stakeholders	Social partners (trade unions and companies) and local/national authorities.
Specific benefits	Facilitate competitiveness and quality of training, and meet the changing demands for qualifications from productive sectors.
Conditions for success	Available resources to finance the infrastructures necessary to provide training.

SWEDEN

PUBLIC DATABASE COLLECTING INFORMATION FOR SKILLS ANTICIPATION

DESCRIPTION PARAMETERS	DETAILS
Brief description	Sweden has a very advanced skills assessment and anticipation system (SAA) at the national level. The success of SAA lies in the sound database provided by Statistics Sweden as well as the Public Employment Service (PES) in combination with a constructive dialogue between public institutions, trade unions and employers' organisations.
Key stakeholders	Governmental representatives, public employment services, employers' organisations and trade unions
Specific benefits	It is a combination of different tools and an active dissemination of the results by all stakeholders. This allows for the adaptation of regional policies to the respective skills needs.
Conditions for success	A reliable database which offers orientation for all players involved.

UK

SECTOR SKILLS COUNCILS TO BETTER UNDERSTAND LABOUR MARKET AND NECESSARY SKILLS

DESCRIPTION PARAMETERS	DETAILS
Brief description	Sector Skills Councils (SSCs) have been established to help articulate skills needs by providing information about the labour market situation. SSCs are: <ul style="list-style-type: none"> - state-sponsored, - employer-led organisations that cover specific economic sectors
Key stakeholders	SSCs are driven by employers. Some SSCs also incorporate the views of the social partners.
Specific benefits	Provide a consistent, comparable and rich understanding of the skills priorities within different sectors of the economy.
Conditions for success	The work carried out by SSCs needs to be complementary and coherent with the national system.

TRANSFERRING UNSPENT FUNDS ACROSS SMES TO FUND APPRENTICESHIPS

DESCRIPTION PARAMETERS	DETAILS
Brief description	Since 2017 apprenticeships in England have been partly funded through a levy on large employers. The West Midlands Combined Authority (WMCA) in England were the first combined authority in the country to officially support levy transfers. They work with large employers to transfer their unspent levy funds – money that would otherwise be lost to central government – to local SMEs in need of apprenticeship funding. It keeps investment within the West Midlands, helping to boost growth, support young people, and develop core skills in the area.
Key stakeholders	West Midlands Combined Authority (WMCA), SMEs, large enterprises
Specific benefits	Tackling funding barriers to promote apprenticeship in SMEs Good publicity Regional development
Conditions for success	Persuading SMEs and 'donor' employers to participate WMCA offer a brokerage service – they put donors, SMEs and providers in touch, but do not have access to detailed apprentice (learner) information WMCA as the broker is not funded for the brokerage services

REAL-LIFE LEARNING OPPORTUNITIES FOR STUDENTS TO COLLABORATE WITH INDUSTRY

DESCRIPTION PARAMETERS	DETAILS
Brief description	Brief Cases (http://www.brief-cases.com/home/4589914336), an initiative from The Heaven Company (communications/sustainability consultancy), aims to bridge the gap between academic study and commercial reality. The scheme provides real-life learning opportunities for degree-level students and scope for universities to collaborate with industry. Undergraduates are challenged to work according to the constraints of a business brief in fulfilment of a BA (Hons) degree programme. Through practical application-based projects (with a link to sustainability), students gain valuable entrepreneurial and employability skills, as well as industry awareness.
Key stakeholders	Businesses, universities, schools
Specific benefits	Gives students real-life insights into professional life and introduces themes that are important to businesses and students
Conditions for success	Involvement of universities and schools - they need to agree for this to be taught as a part of the curriculum. Businesses need to propose courses to teach.

A "SHARED" APPRENTICESHIP MODEL AMONG COMPANIES

DESCRIPTION PARAMETERS	DETAILS
Brief description	Small businesses are often dissuaded from engaging with the apprenticeship programme by their perception that apprenticeships are bureaucratic, costly and involve risk. In Wales, a 'Shared Apprenticeship' training model was implemented where a central management organisation holds the responsibility of the apprentice's training contract but where apprentices move between different employers who share the responsibility for the apprentice's true work experience and performance criteria
Key stakeholders	UK government, employers, training providers
Specific benefits	Gaining experience of working with different employers was viewed by apprentices as being a strength of the Shared Apprenticeship pilot and they were highly satisfied with their learning and employment experiences. Most employers who have experienced the shared approach and traditional apprenticeships believed that the Shared Apprenticeship programme compared very well with the traditional apprenticeship modes of delivery
Conditions for success	Need to recruit a set of committed employers who are willing to accept apprentices who are not 'theirs' The availability of apprentices willing to be recruited into the 'shared' version of apprenticeship Successfully manage the movement of young people Role of training officers and training managers was deemed critical in ensuring good communication between apprentices, employers and training providers

C. NATIONAL ROADMAPS

FRANCE²⁴

GET TO KNOW EACH OTHER BETTER

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
1.1	VET OFFERING	YES	Varied and complicated training offering (national education, professional specialisation) for a young person or job seeker to understand Very heterogeneous offering and not adapted to the needs of companies today	Need for detailed mapping Need to disseminate the mapping Business skills campuses (CMQ) should lead education in the electricity sector If we want to proceed with transformation and increase exchanges between companies and teachers, we should promote alternate pathways from general education diplomas and vocational training certificates
1.2	TRAINING NEEDS	YES	At the national level there are already observatories that provide this work on the future needs of the industry in terms of skills There is a lack of knowledge by the industry on the future needs in terms of production; this also has an impact on skills anticipation activity	Continue the work of the observatories (L'engagement de développement de l'emploi et des compétences in PACA - Britain - Haut de France/Ministry of Labour - Ministry of Education); enhance the collaboration with companies on the campuses to present the content of the desired training Other Observatory: Fabrique-energies project (http://www.fabrique-energies.fr/index.php) Training of trainers (companies): Teachers train young people not for a company but for a profession in general. Soft skills will not necessarily be the same Important to work together with companies and national education or training centres to build trainings through the apprenticeship system Importance of the role of the tutor in the company It is necessary to invent a certification process of occupations that is continuous because needs are constantly evolving

1.3	ORGANISATIONAL STRUCTURES	YES	Structures are always too complex; it is necessary to start working on the main themes of the sector and their complementarity	Schedule meeting to know each other better with a dedicated introductory session on: Activities Needs Expected results of each organisation on skills anticipation
1.4	CORRECT TIMING	YES AND NO	Difficulty in aligning temporality between companies and national education	Early plan/invitation according to partners' calendars. It is necessary to implement a continuous process because needs are constantly evolving
1.5	BARRIERS AND RESISTANCE	YES	We don't know each other, and we don't have the same priorities Ministerial organisation/diversity of players and the difficulty of competition/cultural problems	Structural issues: develop immersive cooperation/exchange between companies and teachers (and vice versa) within meetings Changing personal attitudes: it is necessary to also consider the human and vocational dimension of the individual in the invitation to meetings

²⁴ The workshop in France was held on-site on 24-25 October 2019.

INTERACTION PLATFORM

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
2.1	DIGITAL TOOLS	YES AND NO	A tool that maps the supply of providers in France already exists at the national level but must be developed also at the different levels. Lack of interaction. It is necessary to develop other forms of interaction, not just digital	Improve the online system: develop personalised support for young people seeking training, complemented by tutorials and interactive guidance Another form of interaction to use for disseminating the VET offering is meetings between stakeholders (education providers, companies, associations and trade unions)

2.2	DEDICATED PUBLIC (AND NON-PUBLIC) MEETINGS	YES	There are already days where young students are invited to companies to present their work There are also local initiatives to welcome teachers to the companies, but calendar issues are a problem (to be considered also a "CORRECT TIMING" issue) Problem of business attractiveness Initiatives not always well known to the public	New important challenges: introduce a qualitative/quantitative measurement of the effectiveness of such initiatives in order to promote such events Probably more relevant in a regional context In order to promote an attractive image of the sector or to disseminate initiatives it is important to make a better and more efficient use of social media In order to attract young people to a training course, it is necessary to be close to students and organise events at colleges
2.3	REGIONAL PERSPECTIVE	YES	Companies are not aware of all the training courses at the regional level	During meetings it is important to have participants from organisations that work at both the national and regional levels
2.4	FINANCIAL SUPPORT	YES	Ordinance of 21 August 2019 makes the financing of training through apprenticeship complicated. Lack of an overview of existing funds Different points of view between employers and trade unions regarding resources spent on training, lifelong training, trainer of trainers' activities	Evaluate the allocation of funds to relevant training. Develop a new online portal dedicated to existing funds to gather all information in one place Achieve a win-win compromise in terms of money used and efficiency with synergistic yearly planned meetings
2.5	TRAINING FOR STUDENTS AND TEACHERS	YES	Tutor/trainers major problem in companies. Are companies ready to show their needs to teachers?	Pooling of resources, link between training and the professional world (with aggregate needs that do not jeopardise companies' privacy) Need to develop more training tools such as: videos, role-playing, serious games, virtual reality Sharing of training materials in a collective pool

COMMON LANGUAGE

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
3.1	GLOSSARY	YES AND NO	The need for a common language for the occupations and for competencies to ensure that training is adequate for business needs The skills needed by companies are not always integrated into curricula	Develop a glossary around the professions, professional activities and the expected skills (https://ec.europa.eu/esco/portal/escopedia/Occupation). <ul style="list-style-type: none"> For Occupation: <ul style="list-style-type: none"> Occupation name Occupation work context Skills related to the occupation For Skills: <ul style="list-style-type: none"> Skill name Skill description (with an action verb) Skill level (Expert, Practitioner, Working or Awareness) A shared strategy between companies and VET providers to update curricula is necessary with a planned yearly meeting
3.2	DEFINITION OF VET PROVIDERS	YES	In France there is already a nomenclature (DGEFP) and legal criteria with referencing to be in the DATA DOCK (https://www.data-dok.fr)	Could be improved with a closer interaction between social partners and VET providers during planned meetings

MUTUAL POTENTIAL ADVANTAGES

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
4.1	SCALE EFFECT	YES	In France, there is a culture of social dialogue governed by the labour code	Involve other parties as well: the multiplier effect is maximised when the process is not limited to social partners
4.2	INVOLVEMENT OF ALL PARTIES	YES	Attendance at national meeting: always difficult due to lack of time and resources of partners Attractiveness of VET providers: the partnership with the company attracts students on a work-study basis	Attendance at national meeting: <ul style="list-style-type: none"> Early plan/invitation according to partners' calendars Disclose data and statistics before the planned meeting Increase attendance of qualified opinion leaders Evaluate the possibility of also involving students Attractiveness of VET providers: Increase work-based learning during courses
4.3	MEETING THE DEMAND FOR QUALIFIED WORKERS	YES/NO/INADEQUATE	Always necessary to find tools to quantify	Need for detailed mapping of necessity and the measurement of results (define KPI in a plenary meeting between partners and evaluate results in terms of increase in job applications)
4.4	PROMOTING AND FOSTERING INNOVATION	YES	Always necessary	Matching skills and updating competences will "automatically" enhance innovation



HUNGARY²⁵

GET TO KNOW EACH OTHER BETTER

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
1.1	VET OFFERING	YES	<p>The National Register of Professions defines competence areas and skill descriptions</p> <p>There is a national database but there is no single interface where all secondary and higher education training courses appear</p> <p>The country has shifted to a new educational system, which is different from what we knew in the first project phase</p> <p>There is a Support Centre for Innovative Training. This is an electronic interface. One part of this is new vocational training; here you can search for all sectors and trades. You can also search for jobs, then you can apply for the related occupations and training centre. This is a rather hectic list, e.g. the electricity industry or electronics are not included at all</p> <p>Sectoral skills councils were not created for all sectors</p> <p>There is a sectoral social dialogue committee</p>	<p>The systems need to be updated continuously based on the professional competency descriptions; this includes job descriptions, too</p> <p>Large databases need to be interconnected</p> <p>To develop training in the energy sector and the electricity industry, these two sectors need to be included in the sectoral skills council system. To do this, a working group on training needs to be established and a request should be submitted to the government for the creation of a sectoral skills council along with the employers</p> <p>Request the government to create a transparent public platform for higher education and secondary vocational training</p>
1.2	TRAINING NEEDS	YES	<p>Specific future training needs cannot be anticipated perfectly</p> <p>Skills anticipation is done at the employer level (e.g., E-On and MVM strategies)</p> <p>Data exchange between companies on future skills needs is not always allowed</p> <p>The employers' side also plays an active role in defining new vocational training.</p> <p>The skills councils operate at the level of professions, not at the sectoral level. Problems/questions are raised at the level of professions, not at the sectoral level.</p> <p>The role of trade unions was reduced in this process and was taken over by the chamber of industry</p>	<p>Provide for continuous activities of skills councils in the future and create the necessary conditions. Industrial and technological development is extremely fast and these competence profiles need to be maintained continuously</p> <p>We need a skills council for the electricity industry</p> <p>This process could start within the sectoral dialogue council. A proposal on this issue will be presented to the Committee on 15 April 2021.</p>

1.3	ORGANISATIONAL STRUCTURES	YES	<p>The Vocational Innovation Council was established in 2018. It consists of representatives of government agencies, educational organisations, responsible authorities, chambers, trade unions, representatives of large companies and scientific representatives</p> <p>Social partners do not have appropriate contacts with the government and the VET</p> <p>VET are linked to the training centres. These are institutions at the county level, but not connected to each other</p>	<p>With the skills councils we need to develop a group which would involve the government and take the necessary steps for skills adequacy and pass them on with appropriate regulations to the chamber of industry and vocational training centres so that they know exactly what they need to do.</p> <p>The challenges emerging in adult training and in-company training could be dealt with in working groups</p> <p>Based on the example of E-ON and MVM, a network also involving VET and government should be set up</p> <p>The electricity industry has an innovative role and may even function as a model. If we target a national action plan, it would be worth involving the Vocational Innovation Council and set up a skills anticipation group comprising a wide range of social partners</p>
1.4	CORRECT TIMING	YES	<p>The timeframe for the issuance of training and exit requirements is defined by law.</p> <p>Bachelor training, master's courses, PhD training, vocational training and adult education have different cycles and the curricula are updated differently</p> <p>Currently, an audit of the curricula is carried out, taking the needs of employers into consideration</p> <p>The curricula of the different training levels may be changed with a different periodicity.</p> <p>The vocational training centres and schools have to stick to specific enrolment figures. But they have no insight into how these figures are calculated</p>	<p>The system should be considered holistically and defined in the form of an action plan. We should have a structure or system in our mind in which the institutions have their well-defined place. This requires strategic planning both over the medium and long term. Careful preparation and the timely involvement of all partners are of utmost importance</p> <p>Vocational training centres, companies and universities should be able to define the needs and the content together</p> <p>The vocational training act gives VET providers the possibility to set up councils with representatives from the economy and the training institution</p>
1.5	BARRIERS AND RESISTANCE	YES	<p>Experience shows that most companies cannot plan ahead 5 to 10 years. This requires a strategy. The skills councils could contribute to this, especially to the climate strategy</p> <p>The resistance of teachers depends to a great extent on whether they know clearly what and how to do it and if there is enough time for the implementation</p>	<p>Teachers/trainers need to be made aware of the goals and the challenges they work towards</p> <p>An exact description and understanding of the required competencies and methodologies is the basis of working together in partnership.</p> <p>Trend analysis, a better understanding of the main keys to change and the development of a common language are of great importance</p> <p>Specific training and advanced training to train the trainers are required</p> <p>Employers must be ready to fund the process of skills anticipation. Due to the current changes in the electricity sector, the two major companies have a strong interest in cooperating and optimising training conditions</p>

²⁵ The workshop in Hungary was held online on 25-26 March and 9 April 2021.

INTERACTION PLATFORM

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
2.1	DIGITAL TOOLS	YES	<p>A tracking system for graduates was established</p> <p>There is no broad involvement of social partners</p> <p>Companies work with closed intranets which are not accessible</p> <p>The common database is the statistical database of the Central Statistical Office (KSH) in which the electricity industry is not listed separately, so we cannot use it</p>	<p>Appropriately maintained digital databases need to be made available</p> <p>The experiences of final exams should be shared with the experts that draft training plans. It is important to share the final examination results because this gives feedback from the employer to the VET providers on skills adequacy</p> <p>The sectoral dialogue committee (workers' and employers' side) should ask the KSH for data only on the electricity industry</p>
2.2	DEDICATED PUBLIC (AND NON-PUBLIC) MEETINGS	YES	<p>Many professional days, presentations, shows, expos at the national and regional levels</p> <p>No motivating messages on digital platforms targeting young people specifically</p> <p>There are student competitions, science fairs but sometimes a bit obsolete: difficult to find future engineers</p> <p>The dual training system offers the opportunity for an ongoing consultation between the universities and businesses. The consultation is in the form of biannual workshops</p>	<p>An experimental project to explore the background variables of career choices of Generation Z and their availability, increased enrolment by 18%</p> <p>The Electro Technical Association organises such events where they try to present different career options</p> <p>It is very important to outline career opportunities before students specialise</p> <p>Once the skills councils and the related databases are established for our sector, it will be easier to disseminate and motivate at the national level</p> <p>Social players in Hungary organise many programmes and try to be present on different platforms but the efforts and visibility are not systematic. This should be resolved at the sectoral level</p> <p>Schools and companies do a lot in the area of career orientation, but the efficiency could be dramatically improved if they managed to work together</p>

2.3	REGIONAL PERSPECTIVE	NO	<p>Training needs to be general. The labour market is regionally defined. Hungary is a country with extremely limited openness to mobility</p> <p>The country is too small to define skills needs on a regional basis</p> <p>Universities consider regional needs and expectations</p> <p>Many players in the electricity sector have nationwide coverage in Hungary</p>	<p>The intensity of regional cooperation depends on two factors: regional economic development programmes and employment development programmes</p>
2.4	FINANCIAL SUPPORT	YES	<p>Companies help create competence labs and install the latest technologies, so that the latest knowledge can be incorporated into training</p> <p>Subsidising of research goes specifically into improved cooperation between the industry and the universities</p> <p>This is also in the interest of the government; research and development play an increasingly prominent role; more and more resources are provided for this, but not enough to train enough professionals with the appropriate skills</p> <p>Dual training has just been established, and employers have only now started to deal again with the question of training. But it is not possible at the sectoral level, only at the corporate level; therefore, companies will not fund it jointly</p> <p>The ERASMUS+ appropriations have been increased, but students in technical fields can find lack of language skills a considerable problem and an obstacle to engaging in international cooperation. There are far more opportunities available than what students make use of</p>	<p>A large-scale project can only be launched if it is in the interest of the government. It is of utmost importance to map EU applications and project funding possibilities</p> <p>The new Vocational Training Act explicitly proposes the creation of sectoral training centres; so far, only the pharmaceutical industry has created one</p> <p>Granting scholarships to students can raise their interest in the sector</p> <p>The government supports the implementation of more cost-effective training, while companies would improve the economic competitiveness. More than 90 employers belong to the MVM group, but only those joined the initiative to set up a training centre that operates in network construction and maintenance. This centre is a kind of centralisation of vocational training. This is why it would be useful to discuss how it could be further improved in the social dialogue council</p>

2.5	TRAINING FOR STUDENTS AND TEACHERS	YES	<p>Training can be split into two large areas: Hard Skills and Soft Skills</p> <p>Cooperation with the industry</p>	<p>We need a new methodology culture that covers project-based education and research-based education as well. We have to take into account that it takes time for any change to be made in education, or even in teacher knowledge</p> <p>Collaborative PhD training is a new element: the government offers scholarships for the attainment of academic levels and provides aid both to the university and the PhD student. This strengthens the cooperation between universities and companies through the involvement of company staffs</p> <p>The electricity industry is in a special position. The climate policy of the</p>
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COMMON LANGUAGE

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
3.1	GLOSSARY	NOT REALLY RELEVANT	<p>A subsidiary of a multinational corporation operates on the basis of and therefore uses the terminology of the parent company</p> <p>The transformation of vocational training was developed with a relatively simple language</p> <p>The job evaluation systems - used by all companies in the sector - will clearly reveal the content of the different occupations</p>	<p>Taking into account the development processes of vocational training, a description of the jobs in the different professions based on a common glossary would improve the communication between the parties.</p>
3.2	DEFINITION OF VET PROVIDERS	YES	<p>There is a national vocational education system, so it is simplified and will probably be better, and clearer</p>	<p>Vocational training and adult education are regulated by a set of laws. The recognised training occupations belong here, as well</p> <p>It will be important to involve higher education as digitisation requires higher qualifications</p>

MUTUAL POTENTIAL ADVANTAGES

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
4.1	SCALE EFFECT	YES	<p>MVM already has contacts with VET providers and will develop more at the national level</p>	<p>VET providers should make broader agreements with businesses</p> <p>Consider scale effect not only in terms of greater numbers but also efficiency</p> <p>We have to find out for all players: what is their position in a given system and where can we find interconnection points in these systems</p>
4.2	INVOLVEMENT OF ALL PARTIES	YES	<p>Irrespective of their employers, employees - be they new entrants to the labour market or pensioners - share their experiences and the latest developments of their profession within the Electrotechnical Association and organise various meetings</p> <p>'Together for the Engineers of the Future' - universities, companies identify a common platform for training</p> <p>Consultation at the macro level is missing</p>	<p>It is important to give stimulus to the different professions and to make them see their own functions and role to play</p> <p>Perhaps with the involvement of the chambers of industry, neutral data could be collected</p> <p>Vocational training centres, in cooperation with the sectoral skills councils, may play an important role in developing training programmes for relevant skills. The chamber of industry has a smaller role than before</p>
4.3	MEETING THE DEMAND FOR QUALIFIED WORKERS	YES	<p>The different specialisations and majors are being reviewed and the partners have been asked to contribute with their views and to define their needs so that these can be included in the curriculum</p> <p>Labour shortage has an impact on education and training: engineers and computer scientists receive very good job offers already with a BSc and this results in a substantially lower number of full-time master's students. The labour market absorbs workforce even with incomplete education</p>	<p>Efficient skills anticipation processes can contribute to the development of a relevant educational system</p> <p>Site visits have always been organised, but it could be useful to deal separately with the trainers and involve them more intensively in company life</p> <p>The current legal regulations need to be refined so that the trainer can remain the mentor to the student when he/she starts the practical training in the company. The administrative burden of this should not be borne by the companies</p>
4.4	PROMOTING AND FOSTERING INNOVATION	YES	<p>The dual training system was first introduced in the technical, agricultural and business areas and social work joined later, only after the results in the other areas became visible</p>	<p>The creation of the Vocational Innovation Council was an important step. Its work will be important in the future as well</p> <p>The higher education system is currently in the process of transformation and model change. The model change brought protests in some places while others decided to join. Model change means a change in the relevant funding authority</p> <p>Innovation should be considered in training courses, together with the needs of workplaces and jobs</p>

ITALY²⁶

GET TO KNOW EACH OTHER BETTER

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
1.1	VET OFFERING	YES	<p>VET training offerings are located on the MIUR site Training</p> <ul style="list-style-type: none"> · fragmented; it should be aligned into a national system · ESF: disorganised; it should be reorganised <p>Problem of training skills competences between State and the Regions. Regions should make a service offering portal (ANPAL). E-competence excellence centres for Industry 4.0 (Uni and Research Centres throughout Italy included)</p>	A unified training/education portal: employers and trade unions should make a request to ANPAL to activate it
1.2	TRAINING NEEDS	YES	<p>Putting together different subjects, to identify strategic investments in training/ education to understand industry skills demands</p> <p>Bilateral Business Commission</p> <p>Training must become the tool for meeting training needs and territory requests (necessary to use the CCNL!)</p> <p>Move this issue also to the contractor level</p> <p>Developing digital skills for working citizenship (right to inclusion): a plan to be developed for workers and re-employed people</p> <p>There is the "Atlante delle Professioni" (INAPP)</p>	<p>Use the "Osservatorio delle Commissioni Bilaterali Formazione" (ANPAL as team leader?) for digital inclusion as well</p> <p>Group of stakeholders to collect investments and strategic information and share needs (plan as an annual event)</p> <p>Involve the procurement and administration agency sectors</p> <p>Make a summary of the material already available for dissemination (INAPP, Research, etc.)</p> <p>Business case study as a way to read innovation, how CCNL can be applied and how to manage recruitment of new workers</p>
1.3	ORGANISATIONAL STRUCTURES	YES	<p>A lack of knowledge of who-does-what among stakeholders</p>	<p>For trade union organisations, try to get in touch with the places/ institutions of training/education and propose a meeting</p> <p>ANPAL promotes meeting by 2020 with VETs, companies, unions</p>

1.4	CORRECT TIMING	YES	<p>The benefits for VET providers were not well expressed as they were not present at the workshop/In the public administration sector, incorrect time planning leads to inefficiencies</p> <p>To better understand when Regions define training priorities</p>	<p>For trade union organisations, try to get in touch with the places/ institutions of training/education and propose a meeting</p> <p>ANPAL promotes meeting by 2020 with VETs, companies, unions</p> <p>It is necessary to manage a unified calendar (create, up-to-date) for all stakeholders</p>
1.5	BARRIERS AND RESISTANCE	YES	<p>Companies: "envy" of the training product (failure to share of good practices leads to common factor). It is also necessary to have more clarity of their internal training plans</p> <p>School: overcoming suspicion of "side experiences" of school programmes</p> <p>Families' cultural barrier: there is a lack of communication between all subjects (young students and families)</p>	<p>To propose meetings like these:</p> <p>Companies: sessions with companies to define pre-competitiveness levels</p> <p>Families: define the content to be transferred, by what means and speaker</p> <p>Schools: meetings with schools</p>

²⁶ The workshop in Italy was held on-site on 13-14 January 2020.

INTERACTION PLATFORM

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
2.1	DIGITAL TOOLS	YES	<p>Platform that collects the available training offerings and the needs of companies in the sector</p> <p>Comparison of the various studies on strategies, forecasts and foresights of the electro-energy sector</p> <p>Digital training platforms (e-learning) even if not exhaustive</p> <p>Existing school/work alternation register, but not used</p> <p>Non-user-friendly web portals</p>	<p>Reconnaissance of existing tools</p> <p>Collection of existing training offering resources</p> <p>Good practices of working experiences</p> <p>Review, where possible, the ergonomics of portals</p>

2.2	DEDICATED PUBLIC (AND NON-PUBLIC) MEETINGS	YES	<p>Open “power plants”: today there is a tool but it should be perfected (method, clarity of objectives, needs alignment, dissemination)</p> <p>There is no clear and unique transfer of information to families (a key element of young people’s decision to train)</p> <p>There is no educational information and support path for those who train</p>	<p>Electricity Days: “Who goes takes the shock”</p> <p>Periodic regulatory meetings, requirements and scenarios</p> <p>Increased organisation and alignment on “open power plants”</p> <p>Generate widespread electric culture (particularly towards parents and families) with information and goal dissemination activities, using “training days” aimed at young people and families to guide young people’s choices</p> <p>Involve career guidance stakeholders</p> <p>Schedule learning programmes for teachers/professionals (similar to “Path for you”)</p>
2.3	REGIONAL PERSPECTIVE	YES	<p>Unplanned regional component. Activities and investments are based on the regions’ ability to use these tools</p> <p>Knowledge of the supply chain and induced that it is usually comprised of local companies with no communication with each other</p>	<p>From Company Balances and Industrial Plans, identify turnover and employability scenarios at 5-10 years and understand which regions are strategic.</p> <p>The “contract supply chain” involving other regions is also important</p> <p>Investment in the regions based on peak investment and staffing requirements, after discussions with regions, companies and VET providers to create synergies</p> <p>It is necessary to establish a meeting with the Regional Directorate for Training, which periodically defines the objectives of training funds</p>
2.4	FINANCIAL SUPPORT	YES	<p>Just transition: funding adults who are retraining, both those who are working and those who are out of the labour market</p> <p>ESF-funded regional training can be more flexible for managing an ad hoc catalogue for emerging electrical professionals</p> <p>ASTEL project model (directing tool for the needs of companies in the sector)</p>	<p>Verify resource allocation policies for the transition (European Partners)</p> <p>Deepen ASTEL case (point out that pivot is not only for company but equal among all the involved players–stakeholders)</p>

2.5	TRAINING FOR STUDENTS AND TEACHERS	YES	<p>Tutor/Mentor: union agreements are needed to establish pathways for training. They are also to be identified for professional retraining</p> <p>Changing electrical knowledge path for teachers and families</p>	<p>Tutor/Mentor: in order for the “elderly” staff (age 60+ to retirement) to be in heavy work, we propose identifying training paths - the role of tutor of apprentices (the “elderly” worker takes care of the young person, but leaving the typical work activity, almost a trainer of the trade and not just a more experienced work colleague). This new role of senior staff is a retraining because new skills must be added to the manual system in order to connect with the younger generations of workers. In addition, one might think of sending these tutors also to contractors to look after the apprentices of those companies, which are increasingly important for contractors’ “hardware” activities</p> <p>Path of knowledge for teachers: always linking it to the “elderly” staff (not only workers but also technical) could be a way to get companies into schools, training teachers at the new frontiers of the electricity sector. Teachers’ electrical trainers will need to be people who have understood and experienced the evolutions of the production, distribution and transport of energy in the workplace and must have high-level communication and dissemination skills</p>
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COMMON LANGUAGE

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
3.1	GLOSSARY	YES	Occupation Atlas There are professions that are specific to the sector and others that are cross-sectoral. Excelsior: Unioncamere, manufacturing sector forecast database There is not a glossary for the electrical sector with regard to digital issues. Big language differences between schools, businesses and trade unions	INAPP occupation atlas (simplify navigation, create a tutorial) Narration of new jobs, involving those who make them (as an easy-to-understand dissemination tool at all levels) Engage INAPP to share a glossary (INAPP: Pure electrical figures, adaptable digital figures in other industries, standard figures)
3.2	DEFINITION OF VET PROVIDERS	YES	Priority is to act on VET providers and create more engagement	Select VET providers that have electrical specialisations/mechatronics/computer science Involve foundations such as stakeholders (research of institutions and "corporate" academies, Elis consortium) and create a project with leading companies and check whether the training offering is consistent with the demands of companies (involve VET, CRUI – Conference of rectors)

MUTUAL POTENTIAL ADVANTAGES

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
4.1	SCALE EFFECT	YES	There is no mention of similar work being done on other sectors affected by decarbonisation and digitisation (good practices, e.g. automotive, TLC, etc.)	Define a common area of interest to the various stakeholders by looking at good practices even outside sectors (e.g., Enel's Iris Project on Agile Scrum Mode)
4.2	INVOLVEMENT OF ALL PARTIES	YES	Consolidating the social dialogue on training at the sector level (promotion of the trilateral table) is fundamental to the success of this project and lacks guidelines	Create a social dialogue on-party (businesses, trade unions, government, schools, regions, etc.) + "external" referees (technical experts)
4.3	MEETING THE DEMAND FOR QUALIFIED WORKERS	YES	Is it necessary to switch "From Integration Fund to Training Fund?" Soft skill: keep updating the cognitive ability to always be in training Monitoring whether what you did met the demand Company lives in changeable industry scenarios that do not allow for timely definition of the skills necessary for the bolstering of the business	After a joint survey of competencies (minimum and general skill sets that serve as foundation), identify shared assets to reach agreement for use of Fondimpresa resources for out-of-catalogues training Involve employment agencies (Formatemp) who are also skills selectors and training providers Companies: see item 1.2 Monitoring: establish intermediate indicators to reach the objective and, if something is wrong, change the strategy
4.4	PROMOTING AND FOSTERING INNOVATION	YES	There are no common guidelines for: Spreading knowledge Digital training as a tool for social and work inclusion Insufficient inter-sectoral guidelines (construction, TLC, mechanics, automotive, legal, tax, etc.)	Promote meetings with contractors to stimulate the entire value chain of the company Knowledge to overcome "NIMBY syndrome" for implant conversion To innovate it is necessary to educate!



SPAIN²⁷

GET TO KNOW EACH OTHER BETTER

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
1.1	VET OFFERING	YES	The website todofp.es provides the information gathered and updated by the ministry. The Autonomous Regions deliver vocational training Information at the university level regarding the education and training offering in the electricity sector is not easy to find	Greater coordination is required between the different organisations (INCUAL, flagship establishments, autonomous regions, etc.). Prior gatherings of employers, trade unions and companies to detect needs Develop a single platform
1.2	TRAINING NEEDS	YES	INCUAL records the needs of companies, trade unions, professional associations, etc. It produces a feasibility report on the qualification Companies do not set out their strategies, and it depends on them to ascertain training needs Exploitation of FUNDAE data.	Promote a single database of professions at the Ministry of Employment and Education Encourage shared strategies on Sectoral Joint Representation Committees
1.3	ORGANISATIONAL STRUCTURES	YES	The trade union structure is somewhat volatile, as it is linked to trade union elections. As are other structures Use group forums, observatories, meetings that are more effective	With a database structure that shares information from all agents, the system would be less dependent on the structures Make the FUNDAE useful
1.4	CORRECT TIMING	YES	It is important to establish all the activity schedules of the relevant interested parties	The database mentioned previously could serve to ascertain the calendar schedule
1.5	BARRIERS AND RESISTANCE	YES	Uncertainty because of the powers transferred to Autonomous Regions and almost constant legislative changes The system must enhance the value of intermediate level vocational training. There is no need to qualify in order to work	Promote recruitment (employment) with qualifications

INTERACTION PLATFORM

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
2.1	DIGITAL TOOLS	YES	In January the creation of a platform known as the "Alert Network" was approved, gathering information from all agents regarding new qualification needs, or updating existing needs	Launch the "Alert Network" platform for qualifications, and strengthen FUNDAE
2.2	DEDICATED PUBLIC (AND NON-PUBLIC) MEETINGS	YES	AULA in Madrid, involving educational institutions and companies	Stage similar sectoral trade fairs in other autonomous regions
2.3	REGIONAL PERSPECTIVE	YES	Qualifications and certificates at the national level; the responsibility for delivering this lies with the Autonomous Regions. Little geographical mobility among students	Establish nationwide regulations
2.4	FINANCIAL SUPPORT	YES	There are European and national grants, but doubts as to how to access them	Use should be made of contributions by companies and workers. A governing body to administer the system
2.5	TRAINING FOR STUDENTS AND TEACHERS	YES	The Autonomous Regions are responsible for teacher training. In vocational training, the role exists of a specialist teacher who is not a teaching professional but contributes know-how	The Autonomous Regions should use the allocated funding to train teaching staff

²⁷ The workshop in Spain was held on-site on 11-12 February 2020.

COMMON LANGUAGE

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
3.1	GLOSSARY	NO	In Spain there are no differences in terms of language	Distribute and use the INCUAL glossary (https://incual.mecd.es)
3.2	DEFINITION OF VET PROVIDERS	YES	System allowing providers to be identified	Identification and evaluation of training providers

MUTUAL POTENTIAL ADVANTAGES

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
4.1	SCALE EFFECT	YES	Dual vocational training has not really taken off in all Autonomous Regions Continue working with those involved	Example of the Basque Country, where companies, high schools, parents and public authorities draw up a joint programme and everyone benefits
4.2	INVOLVEMENT OF ALL PARTIES	YES	The strategies are not known and shared, and needs arrive too late Approach to other sectors without neglecting the initial goal	Approach to the Integrated Technological Solutions sector
4.3	MEETING THE DEMAND FOR QUALIFIED WORKERS	YES	Technology transfer agreements between companies and training institutions	Access by trainers to workplaces should be encouraged to understand their reality, by establishing agreements
4.4	PROMOTING AND FOSTERING INNOVATION	YES	Collaboration with universities. Partnerships. Agreements between companies	The need would be for more gatherings with other sectors to share experiences

SWEDEN²⁸

GET TO KNOW EACH OTHER BETTER

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
1.1	VET OFFERING	YES	More coordination and oversight needed In certain areas, there are wage differentials between electrician occupations that make it more difficult to recruit for certain occupations Education has high thresholds for entering further education Need for greater geographical spread of training providers There is a gap between the models that exist for training and that which is practised in the sector	An authority responsible for coordination is needed Several different training providers exist EBR ["Elbyggnadsrationalisering" - rational construction of distribution networks] and consultation take place between employers and trade unions. There is a training matrix in EBR Job and technology training are available on heat and power and are aimed at young people and those outside the labour market. Training locations need to be marketed and training needs to be valued more highly Sixth form college is the foundation in Sweden. It provides the basic education for electricians and fitters in Sweden
1.2	TRAINING NEEDS	YES	There is an age gap as many were trained during the time when the state and municipality were responsible, but since deregulation, fewer have been trained	Training needs are nationwide. There is a need to raise the status of the various occupations in the sector There is a need to anticipate skills needs in the sector
1.3	ORGANISATIONAL STRUCTURES	YES	In a deregulated market where the employer doesn't know how long a maintenance contract/short maintenance contract will last, there is resistance to investing in education	There are opportunities for cooperation at the regional level between companies and regions (municipalities). Systematics and structure are called for in the education sector Responsibility lies with the state, but also with the sector and companies There is also a need to learn best practices from other countries
1.4	CORRECT TIMING	YES	Retiring workers are not replaced in a timely manner	Educational planning is required as it takes a long time to complete education and training The need is great and recruitment is lagging behind Apprenticeship schemes and certificates for the sector are called for The industry needs a coordinated understanding of the type of competence that is needed

1.5	BARRIERS AND RESISTANCE	YES	The wishes of the students determine the offering of the trainers, not the needs of the companies in the sector	Training is often arranged according to a short-term need and more long-term planning is needed More information about the occupations in the sector is needed It is difficult to attract applicants to courses in energy
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²⁸ The workshop in Sweden was held online on 4-5 May and 31 May 2021.

INTERACTION PLATFORM

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
2.1	DIGITAL TOOLS	YES	The sector is now aware of the database mentioned in the OECD database, but it is rather broad The pandemic has led to a transformation of education digitally. Digital education works well Much planning is done that does not always lead to implementation and training	Employers' organisations carry out their own surveys of skills needs through questionnaires among companies in the sector
2.2	DEDICATED PUBLIC (AND NON-PUBLIC) MEETINGS	YES	Training is expensive EBR days are organised. However, the high cost of attending EBR days is limiting participation from some companies in the sector	Important to get into upper secondary education There is increased interest from various training providers, especially in wind power Important that those regions where labour needs are assessed also identify needs and that training is offered there
2.3	REGIONAL PERSPECTIVE	YES	Currently, the location of training can limit applicants to courses when it is more expensive to train elsewhere Currently, further training within companies is financed for those who are hired without the right skills Funding for further education is available through government loans	If the right needs were identified, costs would be shared between the different players in the sector. Exchanges between employers and government for training within the sector can be improved Right to study leave There is also an investment corresponding to nurses - the investments are being sought A plan for skills development and funding in the sector from the government is needed State and regions need to be more responsive to the needs signalled by the sector

2.4	FINANCIAL SUPPORT	YES	Skills are purchased from external providers to ensure the right skills are taught A major challenge to keep teacher skills up to date Further education often has competent teachers	Recruitment of experienced trainers required. Practical moments are often important training. Both for the student and the teacher Digital and technological developments require a wide range of skills in the sector Company visits to upper secondary school programmes are important for recruitment to the sector
2.5	TRAINING FOR STUDENTS AND TEACHERS	YES	The Autonomous Regions are responsible for teacher training. In vocational training, the role exists of a specialist teacher who is not a teaching professional but contributes know-how	The Autonomous Regions should use the allocated funding to train teaching staff

COMMON LANGUAGE

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
3.1	GLOSSARY	NO	Dialectal differences may exist when it comes to tools but when it comes to electrical safety there is a common language	Swedenergy (Energiföretagen Sverige) has made a glossary that covers current expressions and words in the industry (to be used for fast-track training of new arrivals) The ESA (Electrical Safety Instructions) also specify the rules and expressions to be used and are very important for safety in the sector The Swedish model means that people are used to working together and when it comes to the content of the work and the skills required in the sector
3.2	DEFINITION OF VET PROVIDERS	NO	Definitions: upper secondary school, vocational college, folk high school, universities and colleges	Skills development and training within companies The industry provides some education (ESA training)

MUTUAL POTENTIAL ADVANTAGES

N°	KEY ISSUE	IS IT RELEVANT? (YES/NO)	NATIONAL RELEVANCE/OBSTACLES	NATIONAL PRACTICE TO ADOPT
4.1	SCALE EFFECT	YES	Deregulation and procurement affect the ability to benefit from economies of scale Major investments are needed in the sector but network roll-out and renewal is being delayed and a government implementation plan is needed	It is important for there to be coordination between regions Coordination between different sectors is also important for planning the benefits of investing in training
4.2	INVOLVEMENT OF ALL PARTIES	YES	Coordination and planning are needed to complete the planned transformation of the sector Educational representatives should also be involved in these workshops	An organisation should be appointed to coordinate the needs of the sector. In order to secure the future supply of skills, the costs of training must be distributed fairly and the state must participate in financing
4.3	MEETING THE DEMAND FOR QUALIFIED WORKERS	YES		Works relatively well with competence development for qualified employees
4.4	PROMOTING AND FOSTERING INNOVATION	YES		Broad industry, which makes it a little more difficult Learn from other industries and, perhaps, even cooperate at times. E.g., process and paper industry, where we sometimes compete for the same competences/personnel



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